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TREATMENT OF BURNS

WITH 2.5 PER CENT SULFADIAZINE IN 8 PER CENT TRIETHANOLAMINE SOLUTION

MILTON ROTHMAN, M.D.
JOSEPH TAMERIN, M.D.
AND
JESSE G. M. BULLOWA, M.D.
NEW YORK

When the surface of the body has been damaged by flame, scalds or chemicals, plasma escapes from the circulating blood into the injured tissue and from the surface deprived of protective coating. The resulting hemoconcentration, if uncorrected, may prove fatal. The exposed tissues provide an excellent culture medium without the usual dermal barrier to infection.

We have treated 32 patients suffering from burns which involved up to 45 per cent of body surface as measured by the scale devised by Berkow,[1] with two deaths. These 2 patients died in secondary shock within the first forty hours. Sufficient plasma or blood was not available to counteract the hemoconcentration. One patient had the entire left upper extremity completely charred. The other had a third degree flame burn involving 45 per cent of surface, mostly the trunk. There was no evidence of sulfadiazine toxic action on physical or laboratory examination during life.

The local treatment of these patients was application of 2.5 per cent sulfadiazine in 8 per cent triethanolamine solution [2] in accordance with the method of Pickrell [3] modified to provide rapid formation of an eschar by desiccation of the exuded serum. The method used was as follows:

On admission of the patient to the accident ward, usual methods to combat shock are promptly instituted. These are frequent plasma infusions (as much as 2,500 cc.), adrenal cortex extract (1 cc. each day) and warmth. If the clothing is adherent, it is removed under morphine narcosis by soaking the patient or part involved in a tub of water at 100 F. Usually the clothing is not adherent and can be cut away. The patient is then placed on sterile sheets, and with aseptic technic the wound is cleansed. The surgeons wear caps, masks, sterile gowns and gloves during the procedure. Blisters are opened, and loose shreds of epithelium and skin are removed. The area is again sponged with sterile water at 100 F. If all the dirt is not removed by this technic we use the suds of white soap on cotton balls. Grease is removed with ether or benzine. The entire procedure is carried out without anesthesia, rapidly and without pain. Green soap, gauze and scrubbing are not used.

The 2.5 per cent sulfadiazine in 8 per cent triethanolamine is sprayed on the surface of the wound every hour on the first day. After each application the surface of the wound is dried by fanning or, more recently, by an electric hair drier with warmed air. The same procedure is carried out every two hours on the second day, every three hours on the third day and every four hours on the fourth day. A heat cradle is used to maintain the body temperature at 90 F. Care should be taken to avoid any burns from this source. At all times aseptic technic is maintained. Physicians, nurses and visitors wear caps, masks and gowns.

A thin, pliable and translucent eschar forms in twenty-four to thirty-six hours and after the fourth day. Spraying is rarely necessary. No dressings are applied at any time. Sedatives are rarely required after the eschars are formed, and nursing care is minimal. Between the tenth and the twelfth day the edges of the eschar tend to curl; at this time wet dressings of the sulfadiazine triethanolamine solution are applied. As the eschar curls at its edges, a potential portal of entry for bacteria forms. Wet dressings of 2.5 per cent sulfadiazine in 8 per cent triethanolamine solution are applied at this stage in order to prevent secondary infection. Sometime between the twelfth and the twenty-second day the eschar will be completely separated, and its removal may be facilitated by cutting away the loose portions. When infection occurs, purulent material is readily visible because the eschar is translucent. A window is cut in the eschar to permit drainage. Wet dressings of the sulfadiazine solution are applied over the infected area until the infection has cleared. The procedure is the same for second and third degree burns. The spray has been used about the face, eyes and mucous membranes without injury. Similarly the 2.5 per cent sulfadiazine in 8 per cent triethanolamine solution is used on joints and fingers without constriction or limitation of motion. The eschar is pliable and does not crack.

Dr. Rothman is research fellow in surgery, Dr. Tamerin is associate visiting surgeon and Dr. Bullowa is visiting physician, Harlem Hospital.

Miss Mildred Sommers studied the cultures. Herman Ratish is responsible for the blood level determinations. Dr. W. G. Malcolm of Lederle Laboratories, Inc., Pearl River, N. Y., supplied the sulfadiazine solution.

From the Surgical and Medical Services of Harlem Hospital, Department of Hospitals, New York, and the Littauer Pneumonia Research Fund of New York University College of Medicine and the Metropolitan Life Insurance Company.

1. Berkow, S. G.: Value of Surface Area Proportion in the Prognosis of Cutaneous Burns and Scalds, Am. J. Surg. **11**: 315-317 (Feb.) 1931.

2. The 2.5 per cent solution is clear but darkens on exposure to light and consequently is stored in a dark bottle. It is almost colorless and does not stain the tissues or linen. The drug is absorbed through the early eschar, reaching its highest level in the blood stream on the second day and receding thereafter until it has disappeared from the blood stream on the sixth day. Blood stream levels range from 2 to 8 mg. per hundred cubic centimeters.

3. Pickrell, K. L.: A New Treatment for Burns, Bull. Johns Hopkins Hosp. **69**: 217-221 (Aug.) 1941.

Sulfadiazine blood levels, measurements of the urinary output and intake, and a study of the urinary sediment for red blood cells and sulfadiazine crystals were done frequently. None of the 32 cases studied exhibited any signs of sulfadiazine toxicity.

Observations in Thirty-Two Cases

Case	Age	Sex	Color	Day of Admission	Etiology	Shock on Admission	Previous Therapy	Stay in Bed	Time in Hospital	Days Before Grafting	Area Involved	Extent of Burn	Infection and Day
1	1	♂	N	1	Fire, clothes	None	None	16	20	..	Arm, hand	12% 2d degree	None
2	38	♀	N	1	Scald, hot water	None	None	5	15	..	Face, neck, chest	15% 2d degree 3% 3d degree	None
3	24	♂	N	3	Fire, clothes	None	Ointment	15	18	..	Abdomen	16% 2d degree 3% 3d degree	Beta streptococcus, 11th
4	50	♂	W	1	Explosion	80/60	None	16	52	28	Face, hands, neck, foot, chest	15% 2d degree 5% 3d degree	None
5	8	♂	N	1	Fire, clothes	None	None	16	18	..	Abdomen, back	18% 2d degree 3% 3d degree	None
6	35	♂	N	4	Flame, benzene	None	Ointment	38	54	22	Leg, hands	4% 2d degree 14% 3d degree	Staphylococcus aureus, 11th
7	3	♀	W	1	Radiator	70/50	Oil	20	28	Ready on 24th; signed out	Arm, thigh, leg	12% 2d degree 8% 3d degree	None
8	45	♂	N	2	Scald, hot water	Mild shock	None	20	24	..	Abdomen	11% 2d degree 4% 3d degree	None
9	49	♂	N	4	Scald, hot water	None	Ointment	17	24	..	Chest, shoulder	12% 2d degree	Staph. aureus, 12th
10	57	♂	N	1	Fire, kerosene	None	None	11	12	..	Leg	14% 2d degree	None
11	3	♀	N	1	Hot stove	None	None	12	14	..	Buttocks, abdomen	14% 2d degree	None
12	11 mo.	♀	N	1	Scald, water	None	None	8	9	..	Chest, abdomen, face	10% 2d degree 3% 1st degree	None
13	5	♂	N	1	Hot oil	None	None	10	12	..	Back	12% 2d degree	None
14	2	♀	N	2	Hot stove	None	None	22	28	..	Abdomen, thigh	15% 2d degree 4% 3d degree	Beta streptococcus, 12th
15	21	♀	N	1	Flame, clothes, scald	84/58	None	24	28	..	Legs, neck	13% 2d degree 3% 3d degree	None
16	3	♂	W	1	Scald, coffee	None	None	22	26	..	Neck, arm, chest, thigh	20% 2d degree 4% 3d degree	None
17	28	♀	N	1	Fire, clothes	88/62	None	25	27	..	Abdomen, leg	17% 2d degree 4% 3d degree	None
18	18 mo.	♂	N	3	Scald, tea	None	Ointment	10	14	..	Chest	16% 2d degree	None
19	4	♀	N	1	Scald, water	None	None	20	26	..	Abdomen, chest, thigh	19% 2d degree 5% 3d degree	None
20	22	♂	N	1	Scald, water	None	None	19	21	..	Face, neck, chest, thigh	16% 2d degree 3% 3d degree	None
21	33	♂	N	2	Scald, water	None	Ointment	11	13	..	Leg	11% 2d degree	Staph. aureus, 11th
22	42	♀	N	1	Fire, clothes	40/20	None	Died in 28 hours		..	Arm, chest	22% 3d degree 5% 2d degree	
23	32	♂	W	1	Fire, clothes	80/60	None	60	78	38	Chest, abdomen, leg	30% 3d degree 8% 2d degree	Staph. aureus, Beta streptococcus, 10th
24	32	♂	N	3	Fire, clothes	None	Ointment	54	60	34	Legs	12% 3d degree	Beta streptococcus, 14th
25	8 mo.	♂	W	1	Explosion	60/40	None	28	68	30	Scalp, hands	18% 3d degree	None
26	5	♀	N	1	Fire, clothes	60/38	None	40	84	44	Neck, face, chest, arms	30% 3d degree 8% 2d degree	None
27	28	♀	N	1	Fire, clothes	88/64	None	38	74	44	Arm, back, neck	16% 3d degree 18% 2d degree	Alpha streptococcus, 10th
28	18 mo.	♀	N	1	Hot cereal	40/20	None	22	27	..	Abdomen, chest	22% 2d degree	None
29	30	♀	N	1	Scald, water	None	None	19	20	..	Face, abdomen, back	22% 2d degree	None
30	23	♀	N	2	Fire, clothes	64/30	None	In hospital condition good			Abdomen, chest, thigh	40% 3d degree 8% 2d degree	Staph. aureus, 12th
31	29	♀	W	1	Fire	30/0	None	Died in 40 hours		..	Abdomen, chest, arms	40% 3d degree	None
32	30	♀	N	1	Hair drier	60/20	None	In hospital condition good			Scalp, face, abdomen, chest, arms	45% 3d degree	None

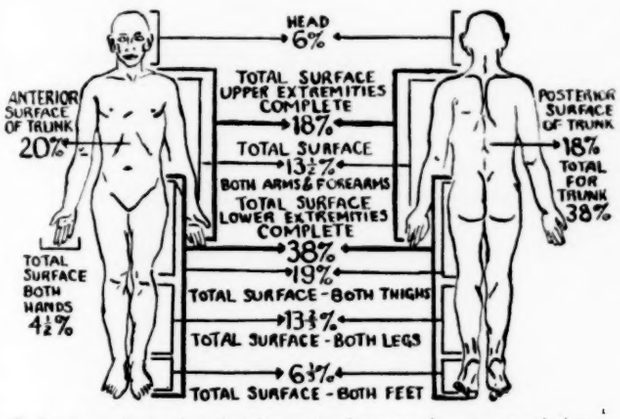
The cases are listed with pertinent data in the table. There were 7 white and 25 Negro patients. The ages ranged from 8 months to 57 years. Six were infants under 2 years of age, 7 were from 2 to 12 years of age and the remaining 19 patients were above 13 years of age. There were 10 burns produced by scalds of hot water, coffee or oil, and 22 by flame. Of the 24 admitted during the first twenty-four hours, 2 were infected. Of the 3 admitted in the second twenty-four hours, all were infected, and all 4 patients admitted between the second and fourth days were infected. Seven patients had received previous therapy with oils, ointments and grease. Secondary infection was present in 5 of this group, treated previously with home remedies and in 4 of the 25 patients admitted without previous therapy. Of the 9 cases in which infection occurred, 6 entered the hospital after the first twenty-four hours. Of 1 patient with a beta Streptococcus hemolyticus infection of the wound where the eschar had peeled, the infection failed to respond to treatment with sulfanilamide powder, saline wet dressings and azochloramid but cleared promptly following the application of massive wet dressings of the sulfadiazine solution.

Cultures were taken from the wounds on admission, and the organisms usually found were Staphylococcus albus and Escherichia coli. Of the patients who had previous therapy or were admitted late, subsequent cultures showed beta Streptococcus hemolyticus in three, alpha Streptococcus in 1 and Staphylococcus aureus in the remaining 4.

No patients are included in this analysis in whom less than 10 per cent of the skin area was involved. The area burned varied from 12 to 45 per cent of the body surface. The face was involved in 5, the extremities in 20, and the abdomen, back and chest in 20. All the patients had second and third degree burns. Eight of the 32 patients required skin grafting, usually in twenty-two to forty-four days after the accident. The skin of all the patients was supple.

SUMMARY

1. Treatment employing 2.5 per cent sulfadiazine in 8 per cent triethanolamine was found to be valuable in 30 of 32 patients with second and third degree burns, resulting in supple skin without toxic action from the sulfadiazine.



Berkow's method of estimating extensiveness of cutaneous lesions.

2. The prompt production of an eschar by spraying and drying alleviates pain and frequent dressings.

3. On the tenth day compresses of 2.5 sulfadiazine in 8 per cent triethanolamine may be used to prevent infection about the separating margin.

4. The solution may be employed without irritation or constriction about the face, mouth, eyes, joints and fingers.

The Thomas Splint in the Last War.—The battle of Arras, which took place in April 1917, was about to be fought, and Colonel Gray, being convinced that a great saving in life might be effected in these cases by the use of the Thomas splint as a routine method of fixation, instituted a well organized educational campaign throughout the medical men of the Third Army to achieve this object. This campaign was carried out with the knowledge and approval of General Allenby. A good supply of Thomas splints was distributed to the field ambulances and even further forward, and orderlies were trained to put these on. The result was that cases, instead of arriving at the casualty clearing station almost moribund from shock and exhaustion, came in well enough to stand immediate operation, and the death rate in the clearing station of one army actually fell from nearly 50 per cent in 1916 to 15.6 per cent in 1917.—Wade, Henry: Emergency Surgery in the Field, from War and the Doctor, edited by J. M. Mackintosh, M.D., Baltimore, William Wood & Co., 1942.

THE INCUBATION PERIOD IN EPIDEMIC POLIOMYELITIS

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Recent reviews of work on poliomyelitis [1] contain no data pertinent to the incubation period of this disease in man. Many persons following Wickmann's [2] lead attempted to estimate the incubation period from the occurrence of multiple cases in given families. Aycock and Eaton,[3] in studies of multiple cases in more than 500 families, demonstrated that simultaneous infection is the rule in familial poliomyelitis and that the shorter intervals are probably due to a variation in the incubation period in simultaneously infected persons. Since the method of transmission of the disease has not been proved for man,[4] the only feasible method of estimating the incubation period directly is to collect a series of instances in which the initial victim in a neighborhood either visited or was visited by a patient with acute poliomyelitis from some other neighborhood.

In an extensive outbreak in Walker County, Ala., in the summer and fall of 1941, there were 37 instances in which the initial victim in a neighborhood followed a single short visit (less than forty-eight hours) to or from a prior victim of acute poliomyelitis.[5] The place and date of exposure, with the essential data on the victim and on the prior patient, are presented (table 1). Careful histories were taken at the home of the victim and of the contacted child and at the homes of neighbors, friends, relatives and contacts. In 25 neighborhoods I visited every home. As far as could be ascertained, the single exposure recorded was the only instance of exposure to a prior case, or even the only exposure in the immediate vicinity of an acute case. Each victim lived at least a quarter of a mile from the nearest prior victim, and the average distance by road was 4.5 miles and by airline 2.9 miles from the nearest prior victim. The visits averaged hours in intimate contact, the least being a child's "ten minutes." The onset was taken as the day on which the first prodromal symptom appeared.

Of the 37 victims 29 had paralytic (78 per cent) and 8 had abortive attacks with signs and symptoms of the central nervous system; 5 of the paralytic cases were fatal. Of the 29 paralyzed victims 22 (76 per cent) had been exposed to another with paralytic poliomyelitis; 6 had been exposed to a patient with abortive poliomyelitis with signs and symptoms of the central nervous system (stiff neck or back, and the like); 1 had been exposed to a child who had a fever eight days after exposure to a patient with a paralytic attack at the onset of its prodromal period.

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This work was supported by the National Foundation for Infantile Paralysis and the Alabama and Walker County departments of public health.

1. Survey by the International Committee for the Study of Infantile Paralysis, Organized by Jeremiah Milbank, Baltimore, Williams & Wilkins Company, 1932, p. 370. Clark, Armstrong, Rivers, Goodpasture, Paul and Ober.[4]

2. Wickmann, O. I.: Beitrage zur Kenntniss der Heine-Medinschen Krankheit, Berlin, Verlag Karger, 1907.

3. Aycock, W. L., and Eaton, P.: The Epidemiology of Infantile Paralysis: The Relation Between Multiple Cases in the Same Family, Am. J. Hyg. **5**: 724-732, 1925.

4. Clark, P. F.; Armstrong, C.; Rivers, T. M.; Goodpasture, E. W.; Paul, J. R., and Ober, F. R.: Infantile Paralysis: A Symposium Delivered at Vanderbilt University, National Foundation for Infantile Paralysis, Inc., New York, 1941.

5. Casey, A. E.: Observations on an Epidemic of Poliomyelitis, Science **95**: 359-360 (April 3) 1942.

The incubation period when plotted from the day of exposure to the onset of the prodromal period (chart 1) varied from five to thirty-five days [6] and averaged 12.8 ± 1.2 days for the 29 paralytic cases and varied from five to fifteen days and averaged 9.5 days for the 8 abortive cases. The lack of a sharp peak in the distribution curve was not due to grouping. afebrile interim before the fever associated with the development of paralysis set in. It is possible that some mothers did not detect this prodromal febrile period and that in other instances such a period did not occur. In the abortive cases the prodromal fever seemed to have been vigorous and to have continued generally without an afebrile interval until the develop-

TABLE 1.—*Incubation Period in Epidemic Poliomyelitis—Thirty-Seven Instances of Single Exposure*

Victim (2d Child)									Prior Acute Case (1st Child)						
Exposure							Date of							Date of	
Date	Place	Name	Race	Sex	Age	Resided	Onset	Paralysis	Name	Race	Sex	Age	Resided	Onset	Paralysis
Paralyzed Cases (5 Fatal)															
7/ 5	Barney	Kugler	W	F	1	Barney	7/10	7/15 D	(Jones	W	F	6	Barney	7/ 6	7/ 6)
7/ 2	Barney	Herron	W	M	1	Brdntn	7/11	7/16	(Rssll	W	F	2	Barney	6/24	7/ 4)
7/ 7-9	Tuggle	(Whtlw	W	F	1	Saltrs	7/21	7/24 D)	Laird	W	M	1	Ruby	7/ 9	7/13
7/ 7	Stphns	Stphns	W	M	10	Stphns	7/25	7/25	(Grubb	W	M	2	Admsvl	7/ 8	CNS)
7/ 8	Barney	Parker	W	M	1	Dora-A	7/13	7/16	(Lawsn	W	M	1	Barney	7/ 6	CNS)
7/11	ClyCmp	Sandln	W	F	5	ClyCmq	7/19	7/26	Stanly	W	F	2	Dvrtwn	8/16	7/18
7/13	Coplnd	Fuller	W	M	1	Coplnd	7/21	7/27	(Natns	W	F	3	Brdntn	7/13	CNS)
7/13	Coplnd	Fuller	W	M	10	Coplnd	7/24	7/28 D	(Natns	W	F	3	Brdntn	7/13	CNS)
7/13	Coplnd	Fuller	W	F	15	Coplnd	7/20	7/27	(Natns	W	F	3	Brdntn	7/13	CNS)
7/18	CylCmp	Robnsn	W	F	3	Bnchfl	8/ 1	8/ 5	Sandln	W	F	5	ClyCmp	7/19	7/26
7/19	ClyCmp	Smpson	W	F	0	Byview	8/ 2	8/ 6	Sandln	W	F	5	ClyCmp	7/19	7/26
7/19	ClyCmp	Mason	W	M	4	Byview	8/ 3	8/ 9	Sandln	W	F	5	ClyCmp	7/19	7/26
7/19	ClyCmp	Mason	W	M	7	Byview	8/ 3	8/ 7	Sandln	W	F	5	ClyCmp	7/19	7/26
7/19	Disney	Hall	W	F	3	JsprRd	8/ 1	8/ 5	(Roden	W	F	9	Disney	7/21	7/25)
7/20	Coplnd	Wylie	W	M	7	CLeeRd	7/31	8/ 3 D	Fuller	W	M	10	Coplnd	7/24	7/28 D
7/20	Coplnd	Wylie	W	F	12	CLeeRd	7/31	8/ 5	Fuller	W	F	15	Coplnd	7/20	7/27
7/20	Disney	Stover	W	M	2	Disney	8/10	8/13	Bradly	W	F	1	USloss	7/20	7/30
7/22	Disney	Banks	W	M	0	Gorgas	7/31	8/ 5	(Roden	W	F	9	Disney	7/21	7/25)
7/24	FrryRd	Reed	W	F	3	FrryRd	8/ 6	8/ 9	Fuller	W	M	10	Coplnd	7/24	7/28 D
7/26	GobbRd	Leonrd	W	F	0	GobbRd	8/ 5	8/ 9	Gilbrt	W	M	3	Pisgah	7/26	7/28
7/26	Disney	Jean	W	F	1	BrckPl	8/13	8/16 D	Foust	W	M	1	Disney	7/29	CNS
7/26	SouDpt	Wallce	W	F	10	SouDpt	8/13	8/17	(Hdgns	W	F	12	BrckPl	7/28	ONS)
7/27	MarsCm	Cole	W	M	3	MarsCm	8/ 3	8/ 6	Robnsn	W	M	3	Dora-B	7/25	8/ 8
7/28	Banks	Banks	W	M	6	Banks	8/18	8/18	Banks	W	M	0	Gorgas	7/31	8/ 5
8/ 3	Dora-B	Lewlin	W	F	1	Dora-A	8/18	8/18	Robnsn	W	F	0	Dora-B	8/ 3	8/ 5
8/ 3	Dora-A	Miller	W	F	6	Dora-C	8/10	8/14	(McBrd	W	F	6	Dora-A	7/21	CNS)
8/ 7	KeyCmp	Key	W	M	2	KeyCmp	8/21	9/ 1	(Key	W	M	1	USloss	8/ 9	Fever)
8/21	BssRow	Taft	W	F	1	BrynRd	9/25	9/27	Butler	W	M	1	JsprMl	8/15	8/22
8/24	Aldrdg	Ellis	N	M	2	Aldrdg	9/ 1	9/ 6	Knox	N	F	3	Aldrdg	8/25	8/26
Abortive Poliomyelitis (Central Nervous System Signs and Symptoms)															
7/ 6	BarCol	(Stwrt	N	M	1	BarCol	7/20	CNS)	(Jones	W	F	6	Barney	7/ 6	7/ 6)
7/16	Lttltn	Jean	W	F	1	GbblsX	7/23	CNS	Vndver	W	F	1	Lttltn	7/19	CNS
7/16	Lttltn	Jean	W	M	3	GbblsX	7/25	CNS	Vndver	W	F	1	Lttltn	7/19	CNS
7/20	Disney	Foust	W	M	2	Disney	7/25	CNS	Bradly	W	F	1	USloss	7/20	7/30
7/20	Disney	Foust	W	M	1	Disney	7/29	CNS	Bradly	W	F	1	USloss	7/20	7/30
8/ 8	Dora-C	Cstlbr	W	F	0	Dora-C	8/13	8/21 ?	Miller	W	F	6	Dora-C	8/10	8/14
9/ 1	PttnHl	Shedd	W	M	2	PlmrSe	9/16	9/17 ?	(Michr	W	M	3	PttnHl	9/ 1	CNS)
9/14	GurgSt	Hutto	W	M	15	Fairvw	9/26	CNS	(Brown	W	F	2	GurgSt	9/ 4	CNS)

Note: In the tables data in parentheses indicate unreported cases; D, indicates death; W and N, the race; M and F, the sex; and 0, 1, 2 etc., the patient's age.

TABLE 2.—*Incubation Period in Epidemic Poliomyelitis—Eleven Instances from the Literature of Single Exposure*

Victim (2d Child)										Prior Acute Case (1st Child)						
	Exposure							Date of							Date of	
Case	Date	Place	Name	Race	Sex	Age	Resided	Onset	Paralysis	Name	Race	Sex	Age	Resided	Onset	Paralysis
Paralyzed Cases (4 Fatal)																
1	x/ 1	A,NE	B	W	..	..	B,NE	x/13	x/13 D	A	W	..	..	A,NE	x/ 1	x/ 3 ?
2	7/22	B.H.	C.H.	W	..	..	C.H.	8/ 5	8/10 D	B.H.	W	..	..	B.H.	7/21	7/24
3	7/22	W.S.	C.W.H.	W	M	6	C.W.H.	8/ 8	8/11	W.S.	W	M	2	W.S.	7/21	7/23 D
4	7/ 4	HOB	Ry	W	M	6	Ry	7/17	7/22	HOB	W	F	1	HOB	7/ 8	7/10
5	9/12	MG	L.S.	W	F	26	L.S.	9/20	9/25	MG	W	F	26	MG	9/ 9	9/12 D
6	7/31	PO	D.D.	W	F	10	D.D.	8/ 7	8/ 8	PO	W	F	1	PO	7/30	8/ 5
7	8/28	KH	D.A.	W	F	13	D.A.	9/ 7	9/10	KH	W	F	14	KH	8/24	8/28
8	5/30	Y	Stud.	W	M	20	U.Minn.	6/12	6/15 ?	WTH	W	M	3	WTH	5/30	6/ 3
9	7/20	EB	EB	W	M	7	EB	7/25	7/31 ?	AN	W	M	9	AN	7/20	7/23 ?
10	8/ 1	GB	AW	W	M	1	W	8/ 7	8/12 ?	GB	W	F	3	GB	8/ 1	Fever
11	8/ 1	GB	BW	W	M	1	W	8/ 7	8/12 ?	GB	W	F	3	GB	8/ 1	Fever

Note: Fever-abortive poliomyelitis after exposure to paralytic poliomyelitis, no examination during the acute phase; case 1 contributed by Lennon [7]; case 2, B. H., case contributed by Crouch [7]; cases 3, 4, 5, 6 and 7 contributed by Aycock and Luther [7]; cases 8, 9, 10 and 11 contributed by Perkins.[7]

In fact, with other groupings two modes were suggested, one at seven to nine days and another at fourteen to fifteen days. These modes were not due to variation in the severity of the disease but seemed to indicate that in a number of instances a prodromal fever curve of one to three days was followed by an ment of signs in the central nervous system. Perhaps abortive attacks which did not present noticeable prodromal fevers remained undiagnosed and unnoticed in many instances. (This would not be true, of course, with cases of paralytic involvement, and the differences in the average incubation periods may be more apparent than real.)

Because prodromal symptoms may have gone unrecognized in some instances, the incubation period was

6. The minimum incubation period of three days, as previously published,[5] was in error and was the interval between the onset of the prodromal period in the 2 cases rather than the period from exposure to onset of prodromal symptoms of the victim.

plotted from exposure to the onset of paralysis (chart 2). This gave a unimodal curve having a mode at the fourteenth day, a median at the sixteenth day and a mean of 16.9 days; the individual intervals varied from eight to thirty-six days with a skew to the right (chart 2). The skew to the right was possibly due to delayed recognition of paralysis, as minor forms were sometimes not noted until the child began to walk, and the physician was only then consulted.

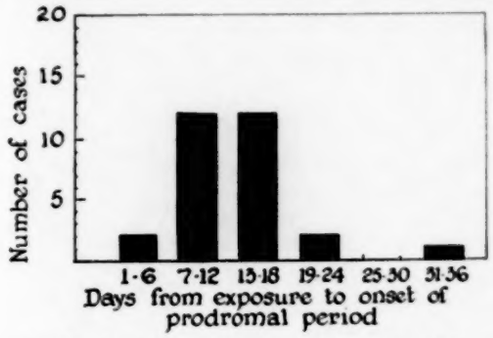

Chart 1.—The incubation period in a series of 29 children paralyzed from epidemic poliomyelitis in Walker County, Ala.

From the literature [7] in the United States 11 additional instances were obtained in which a paralytic victim had either visited or been visited by a prior victim (table 2). The incubation period from exposure to onset of the prodromal period varied from five to seventeen days and averaged 10.1± to 0.9 days. This was not statistically different from the mean incubation period for the paralytic and abortive cases in the Walker County series. By an ingenious study of modes in familial poliomyelitis Aycock and Eaton [8] estimated the incubation period to be about fourteen days. This indirect method also suggested a bimodal peak, one at seven days and another at eleven to sixteen days (chart 1 [3]), but the authors interpreted the two peaks as inadequacies in history taking in which families were wont to say seven or fourteen days rather than days in between. This did not seem to be the case in Walker County, as most of the histories were taken when the details were fresh in the minds of the persons interviewed and a particular effort was made to guard against this pitfall.

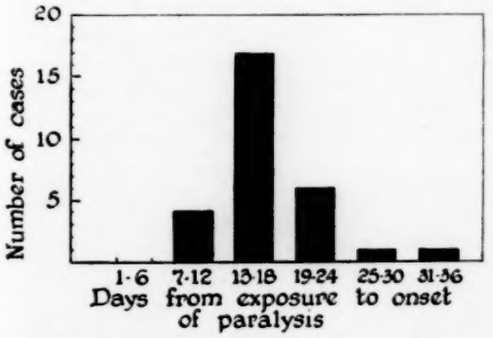

Chart 2.—The period between exposure and onset of paralysis in 29 children affected with epidemic poliomyelitis in Walker County, Ala.

7. Lennon, G. T.: A Report of the Infantile Paralysis Epidemic in Haverhill, Boston M. & S. J. **197**:916-920 (Nov. 17) 1927. Crouch, J. H.: Epidemiological Aspects of the Recent Poliomyelitis Outbreak in Fort Worth, Texas, Texas State J. Med. **23**: 414-416 (Oct.) 1927. Aycock, W. L., and Luther, E. H.: The Incubation Period in Poliomyelitis, J. Prev. Med. **3**: 103-120 (March) 1929. Perkins, J. E.: Apparent Spread of Poliomyelitis Through Four Families, Minnesota Med. **24**: 924-935 (Nov.) 1941.

8. Aycock and Eaton (footnotes 3 and 9).

The incubation period in experimental poliomyelitis is usually as low as four to eight days in rhesus monkeys inoculated with the rhesus-adapted MV Rockefeller virus,[9] but when the same strain of monkey was inoculated with 40 recently isolated human strains by various portals the incubation period varied from four to sixty-four days, averaging 12.3 ± 1.8 days.[10] This mean incubation period is almost exactly the same as that obtained for man in the 37 instances in Walker County, Ala., namely 12.2 ± 1.1 days. In 9 chimpanzees inoculated with recently isolated human strains the incubation period varied from four to eighteen days.

SUMMARY

The incubation period (calculated from exposure to onset of prodromal period) in 37 instances of epidemic human poliomyelitis varied from five to thirty-five days and averaged 12.2± to 1.1 days. This is compatible with the incubation period in 11 cases taken from the literature and with the incubation period in the rhesus monkey or chimpanzee inoculated with freshly isolated human strains.

INTRAVENOUS ANESTHESIA

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It is our desire to report some experiences and observations associated with intravenous anesthesia. In 1935 evipal soluble was administered to 200 patients. A year later experiences with pentothal sodium were obtained. During the past four years intravenous anesthesia has been carried out on 1,157 patients; 1,136 received pentothal sodium and 21 received evipal soluble. A conservative attitude has been maintained in regard to the selection of patients suitable for intravenous anesthesia and in regard to the dosages employed. Fatalities and serious complications following this type of anesthesia usually can be ascribed to an injudicious choice of a proper anesthetic or to overdosage.[1]

Care should be exercised in the choice of all anesthetics. Particularly with intravenous anesthesia should definite criteria be followed. Despite recognition of certain contraindications, this method of anesthesia has a wide application. No attempt has been made to utilize intravenous anesthesia alone for major surgical procedures. It has been used in combination with topical, spinal and block anesthesia. Except for the purpose of induction, it has not been frequently used with inhalation anesthesia, although such a combination may have merit in many instances.

Indications for intravenous anesthesia have been divided into six main divisions: (1) minor short operative procedures, (2) combination with other types of anesthesia, (3) diagnostic procedures, (4) procedures

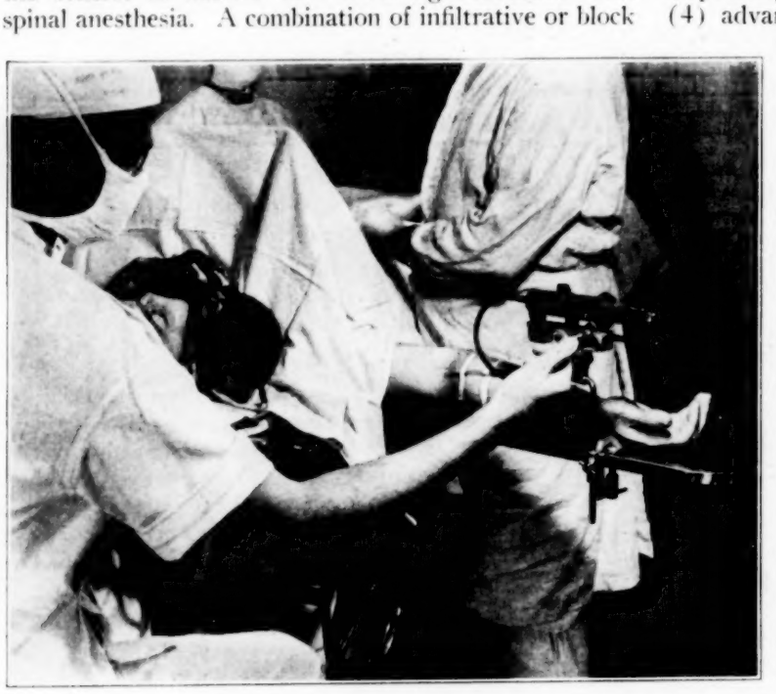
9. Aycock, W. L., and Eaton, P.: A Comparison Between Multiple Cases of Measles, Scarlet Fever and Infantile Paralysis, Am. J. Hyg. **5**: 733-741 (Nov.) 1925. Howe, H. A., and Bodian, David: Neural Mechanisms in Poliomyelitis, The Commonwealth Fund, New York, Oxford University Press, 1942.

10. Faber, H. K., and Silverberg, R. J.: Experimental Air-Borne Infection with Poliomyelitis Virus, Science **94**: 566-568 (Dec. 12) 1941. Howe and Bodian.[9]

Read before the Section on Anesthesiology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

1. Patterson, R. L.: Case Reports of Fatalities Following Intravenous Anesthesia, Proc. Am. Soc. Anesthetists, Feb. 10, 1939.

utilizing electrical apparatus, (5) eye surgery and (6) control of convulsive states. Minor operations of short duration are frequently emergency procedures for which intravenous anesthesia may be preferred over other types of anesthesia. Anesthesia by the intravenous route affords facility to the surgeon in operations about the head and neck. The removal of drains, the dressing of painful wounds, the changing of casts or other procedures which are frequently performed in the ward or in the patient's bed are admirably suited to this form of anesthesia. When there has been recent ingestion of food, the hazard of vomiting can be minimized by intravenous anesthesia. There are various ways in which intravenous anesthesia can be combined with other methods of anesthesia. It is often advantageous to complement or supplement spinal anesthesia by this means. Especially is this applicable to the control of nausea and wretching associated with spinal anesthesia. A combination of infiltrative or block anesthesia plus intravenous anesthesia may be preferable in certain instances. For those patients who are unusually apprehensive, intravenous anesthesia can be instituted for the purpose of induction in the operating room or before the patient's entrance to the operating room. Frequently it is advisable to combine intravenous anesthesia with cocaine or some other topical agent. Intravenous anesthesia in combined form serves as a means of applying this type of anesthesia to major surgical operations without recourse to large doses. Seldom does a diagnostic procedure require general anesthesia; however, in some instances it is necessary. Intravenous anesthesia is preferred for cystoscopy and encephalography. Difficulty is always encountered in providing satisfactory general anesthesia for bronchoscopy and esophagoscopy. Provided it is combined with thorough cocainization of pharynx and larynx, intravenous anesthesia is probably as good a method as any other. In certain situations some type of electrical apparatus such as x-ray or electrocoagulating equipment may be used as a part of or during the operation. In such instances emphasis must be placed on the choice and utilization of a noncombustible general anesthetic such as intravenous. Particularly is this true when high frequency electrical apparatus is used in intraoral surgery or on carbuncles about the head or on the neck. Surgery on the eye lends itself very satisfactorily to intravenous anesthesia. Here again it is advisable to use a topical agent in addition. The agents used for intravenous anesthesia can be used therapeutically in the control of convulsions associated with general or regional anesthesia, eclampsia or tetanus.



Showing one anesthetist without assistance administering intravenous anesthesia and elevating the patient's jaw. The anesthetist has absolute control over the drug at all times, and it may be administered intermittently drop by drop simply by turning the gear wheel.

A practice has been followed of restricting the use of intravenous anesthetics when any one of the following situations arise: (1) the patient is under 15 years of age; (2) there are inflammations about the mouth and throat with potential encroachment on the upper respiratory tract; (3) there is reduced vital capacity; (4) advanced liver or kidney disease is present; (5) shock, hemorrhage or anemia is present; (6) there is severe diabetes mellitus; (7) the operation involves the skin primarily, and (8) the patient is ambulatory. Children will require proportionately larger doses of an intravenous anesthetic agent than adults, owing probably to their increased metabolism and reflex irritability. The response to a given dosage seems to be more variable in a child, and veins are often inaccessible. For these reasons intravenous anesthetics had best be excluded in the younger age group. Infections about the mouth and throat which require drainage present a difficult problem in anesthesia. When such a pathologic condition is present, inhalation anesthesia affords greater control over administration than the intravenous route. Patients with reduced vital capacity from chronic pulmonary disease or cardiac disease may exhibit intolerance to intravenous anesthesia. The explanation for such intolerance may be a low blood oxygen and high carbon dioxide level, as Beecher [2] has pointed out. It is often assumed that advanced liver or kidney disease, or severe diabetes mellitus, is a contraindication to the use of intravenous anesthetics. A mild degree of jaundice has appeared following the administration of evipal soluble, although the extent of liver disease was not determined and the jaundice was transient. Operations dealing with cutaneous tissue such as skin grafting and circumcision require large doses of intravenous agents. It has been felt that other anesthetics might be more applicable for these operations. Intravenous anesthesia cannot be recommended for the ambulatory patient, and that excludes its use in office practice. Intravenous anesthesia should probably be excluded in the states of shock, hemorrhage or severe anemia.

The pieces of equipment essential to performance are minimal. Additional equipment aids materially in the management of patients under intravenous anesthesia. A 20 or 30 cc. syringe with a No. 19 or No. 20 gage 1½ inch (3.7 cm.) needle is used. The larger needle is used for anesthetics of long duration. A large nasal tube serves as a satisfactory airway. The activity of

2. Beecher, H. K., and Meyer, C. A.: Mechanisms of Respiratory Failure Under Barbiturate Anesthesia (Evipal, Pentothal), J. Clin. Investigation **20**: 549-566 (Sept.) 1941.

the pharyngeal reflex is variable, and for this reason a pharyngeal airway is not always tolerated. Tracheal intubation may be advisable under certain conditions. Oxygen apparatus is a necessity. An anesthesia machine, a Boothby-Lovelace-Bulbulian mask or oropharyngeal insuffiation of oxygen by nasal catheter serves equally well for oxygen administration. We prefer to introduce oxygen by catheter inserted into the nasal or endotracheal tube. A detachable arm board aids in administration if a vein in the arm is selected. The facility afforded by some type of syringe holder is of definite value. By its use control of airway as well as administration of the anesthetic can be simultaneously carried out by one person without assistance. A two way stopcock or similar device is of value when it is desirable to administer intravenous fluids and the anesthetic through the same needle.

We would like to point out and stress certain points in the management of intravenous anesthesia. Adequate premedication is essential and can be obtained preferably by a morphine-scopolamine combination administered one and one-half hours prior to the anesthetic or twenty minutes in advance by vein. We believe that overdosage can be more easily avoided by using the weaker 2.5 per cent solution of pentothal sodium. If evipal soluble is used, it is necessary to use a higher concentration. A suitable vein in the arm or leg should be selected as remote from the operative site as possible. Hot packing of the extremities is a valuable procedure if the veins are small or inaccessible. Venipuncture should be performed so that the entire length of the needle down to the hub is contained within the vein. Such puncture insures against dislodgment and subsequent multiple punctures. Cocainization of the pharynx and larynx prior to the insertion of an airway is well worth while. Usually a satisfactory airway can be more easily obtained in a young person than in an elderly patient. In the latter group of patients, particularly if they are without teeth and if the operation is about the face or mouth, it may be advantageous to place a silk suture through the midline of the tongue at the beginning of administration of the anesthetic. By means of a hemostat attached to such suture, the base of the tongue can be elevated during the maintenance and recovery periods.

Twenty-two consecutive anesthetics for enucleation of the eye have been reviewed. Four of these were performed under inhalation anesthesia, 7 under block and infiltration and 11 under intravenous pentothal sodium. It was noted that when intraveous anesthesia was used for this operation there was frequently a slowing of the pulse rate during the procedure. Such a reduction of pulse rate did not occur in any of the enucleations performed under other types of anesthetics. Frequently in these 11 cases the pulse rate was maintained at a slower rate than the initial pulse rate. This was unusual in that usually there is a slight or moderate increase in pulse rate under intravenous anesthetics. In 2 cases there was a reading as low as 44, in 1 case a reading of 48 and in 1 case a transient period of bradycardia and arrhythmia just prior to removal of the eyeball.

In studying the records of the anesthesias in these enucleations it became apparent that the development of bradycardia occurred at the time when maximal manipulation was being carried out on the eyeball and surrounding structures. However, slowing of the pulse would continue after the removal of the eyeball. The use of cocaine topically, of procaine introduced as an orbital block or of scopolamine preoperatively did not seem to retard the appearance of bradycardia. The use of the cardiotachometer is of definite aid in following pulse rates and in detecting abrupt changes in rate and rhythm. Apparently the repeated appearance of bradycardia under intravenous pentothal anesthesia for enucleations is a manifestation of the oculocardiac reflex plus the parasympathetic action of pentothal sodium. This is further evidence of what other observers[3] have pointed out—that pentothal sodium accelerates parasympathetic activity. It is this mechanism which is given as the explanation of such phenomena as sneezing, coughing, retching or hiccups, which are all seen infrequently under intravenous barbiturate anesthesia. Such phenomena occur possibly more frequently during eye surgery than during other types of surgery.

The occurrence of such side actions following administration of the barbiturates may be reduced, but not completely eliminated, by the use of atropine sulfate or scopolamine hydrobromide as premedicants. In 1 case coughing and retching became so severe during induction with pentothal that it was necessary to substitute another form of anesthesia before the operation could be started. Atropine sulfate $\frac{1}{100}$ grain (0.0006 Gm.) was given in this case without effect.

The mechanism of respiratory failure under intravenous barbiturates demands comment. Recently we have observed the creation of apnea lasting for forty-five minutes following administration of 0.7 Gm. of pentothal sodium to a patient suffering from far advanced pulmonary tuberculosis. No response from oxygen under pressure could be elicited. Resuscitation was carried out vigorously with oxygen under positive pressure and carbon dioxide. Apnea may have been prolonged by the use of high oxygen tensions. Respirations were finally initiated following rectal sphincter dilatation. In the light of Beecher's recent explanation[2] for the occurrence of such phenomena this patient may have had a low blood oxygen and a high carbon dioxide level, and the apnea, which was present, might have been maintained by the methods of resuscitation employed.

There has been some question concerning the use of pentothal sodium in a patient who has recently been on sulfur therapy. No known untoward results have followed the combined use of these sulfur containing drugs in our series. It seems probable that no importance need be given to a history of recent sulfur therapy unless, of course, anemia is present. It is preferable to use a freshly prepared solution of pentothal sodium. However, we have frequently used a solution which has been allowed to stand for twenty-four to forty-eight hours or more. Apparently no undesirable effects have been produced by the use of such solutions.

SUMMARY

The attitude outlined toward the use of intravenous anesthesia is conservative. It can be considered that there are indications and specific contraindications

3. Burstein, C. L., and Rovenstine, E. A.: Respiratory Parasympathetic Action of Some Shorter Acting Barbituric Acid Derivatives, J. Pharmacol. & Exper. Therap. **63**: 42-50 (May) 1938. Gruber, C. M.; Gruber, C. M., Jr., and Colosi, N. A.: The Irritability of the Cardiac Vagus Nerve as Influenced by the Intravenous Injection of Barbiturates, Thiobarbiturates and Picrotoxin, J. Pharmacol. & Exper. Therap. **63**: 215-228 (July) 1938.

regarding its application to anesthesia. It is necessary to exercise care in the selection of patients suitable for intravenous anesthesia. Complete equipment is essential in the management of this form of anesthesia. Finally, there is evidence that would indicate that activity of the oculocardiac reflex is exhibited during enucleations of the eye when pentothal sodium is used for anesthesia.

Walter Reed General Hospital.

ABSTRACT OF DISCUSSION

Dr. J. Roy Fulton, Commander, U. S. Navy, Washington, D. C.: Pentothal sodium and the equipment necessary for its use are available at the present time on board all naval vessels with medical officers. Apparatus for the continuous administration of oxygen under intravenous anesthesia is now available on even our smaller vessels. We have not, however, gone entirely overboard in the use of this method of producing general anesthesia. At our home naval hospitals it is not the anesthetic of choice for routine major surgery. It is reserved for use only when it is especially indicated. We have found this method of anesthesia most applicable for short and minor surgical procedures especially when the operation does not involve the respiratory passages or when extensive muscular relaxation, particularly abdominal, is not required. We have found the method of particular value as a supplement to spinal anesthesia when the effects of the latter begins to wear off or when annoying nausea or vomiting is present. Local and regional anesthesia, supplemented by intravenous pentothal sodium, has given us satisfactory anesthesia for extensive intra-abdominal procedures. It has proved to be an ideal anesthetic for the reduction of fractures and dislocations. The method is particularly well suited for surgical procedures about the head and in transurethral and cystoscopic procedures. Pentothal sodium is our anesthetic of choice in the treatment of fresh burns, especially those contaminated by grease or fuel oil. Aboard a combatant ship, pentothal sodium anesthesia, because of the rapidity of the induction and the emergence from anesthesia, ease of administration and nonexplosive qualities, has become the anesthetic of choice. During a lull following a naval engagement, the medical officers are being confronted with a large number of seriously injured persons. In their treatment, all measures which are both effective and time saving are of utmost value. Although shock is listed as a contraindication to the intravenous use of the quick acting barbiturates, our experience has been the same as that of Jarman, who stated, as a result of his war experience, that pentothal anesthesia does not accentuate the condition of the "poor risk" patient. As far as I know, there were no deaths under pentothal anesthesia at the naval hospital at Pearl Harbor. I recently returned from a flight to England where I had the opportunity to visit British hospitals and Royal Air Force burn centers. The impression gathered during this short visit was that, although pentothal was being used in some hospitals for prolonged operations, nitrous oxide-ether is still the most popular anesthetic for routine major surgery. Pentothal appeared to be the favorite anesthetic for minor cases, for the treatment of burns when an anesthetic was necessary, and for the treatment of compound fractures and wounds of the soft parts in the casualty clearing stations.

Dr. Robert A. Hingson, Staten Island, N. Y.: I agree largely with what Bishop and Rudder said. Sodium pentothal is a much safer intravenous anesthetic than evipal and we are using it almost exclusively for intravenous anesthesia. In 300 cases at the Marine Hospital, Stapleton, N. Y., we had two deaths from evipal. In 1,750 anesthetics with sodium pentothal we have had no serious complications. Several other men in our service had training at the Mayo Clinic and together we have given 4,000 intravenous anesthetics with pentothal since Jan. 1, 1940 without a death. We have kept 1 patient under anesthesia for six and one-half hours, using 6.5 Gm. of the anesthetic without complications. We have used it for several children without difficulty. The margin of safety here is not as wide, as the patients require closer supervision. Intravenous morphine preoperatively and during the anesthesia reduces the amount of pentothal required. I accept the authors' other restrictions on the use of pentothal except in cases of inflammation about the mouth and throat with encroachment on the upper respiratory tract. Any anesthetic under these conditions is dangerous, but intravenous sodium pentothal supplemented by 100 per cent oxygen through the endotracheal tube is probably the safest of the general anesthetics. The intubation is performed after a 2 per cent pontocaine gargle to obtund the pharyngeal reflexes. Because of the low blood oxygen and high carbon dioxide I feel that a local nerve block anesthetic should be done when practical. If the desired location for the block makes this impracticable because of the infection, I prefer intravenous sodium pentothal with 100 per cent oxygen. There are insufficient trained physician anesthetists in our hospitals, and we have therefore been giving a course in anesthesia to nurses and they have gone on to other Public Health Service hospitals as anesthetists. After six months' training under careful supervision, these nurses make competent anesthetists. During the last months we have been training pharmacist mates in the Coast Guard to administer intravenous anesthesia. Many of these men are premedical students, graduate pharmacists or young men who have had previous hospital or technical scientific training. We have sent out eighteen of these men on the Coast Guard cutters and small craft which operate in our submarine and weather patrol and in the island bases off continental America. These cutters are sometimes away from adequate hospital facilities for months, and a single doctor and a pharmacist mate look after the medical needs of two hundred men. We spend three months training these pharmacist mates in the principles of operating room technic, blood transfusion and intravenous and drop ether anesthesia. We believe the annals of wartime surgery will add a new chapter on the increasing usefulness of intravenous anesthesia.

Dr. Fred F. Rudder, Atlanta, Ga.: In the past four years about 10,000 pentothal sodium anesthesias have been given in Atlanta hospitals. A majority of these were given for major surgical procedures. Some lasted for one or two hours or more. There have been no fatalities. From the standpoint of a general surgeon, the relaxation and safety accorded the patient from this type of anesthesia have been satisfactory. I feel that the good results obtained are due to the strict adherence to the principle of slow, intermittent administration of the drug as advocated by Dr. Lundy. I also feel that the continuous use of oxygen, 3 to 4 liters per minute throughout the operation, has been of definite value. That one anesthetist without assistance might administer the drug in drop by drop doses and give oxygen at the same time, I have developed a syringe holder with a rack and pinion gear attachment that allows one anesthetist absolute control over the drug at all times. Clotting of blood in the needle cannot occur because the movable arm of the holder will not allow the back flow from the vein into the lumen of the needle. This syringe holder has simplified the administration of the drug in operative procedures of long duration.

Science and the War.—Will the present world war have equally advantageous effects on the advancement of science? Or will an exhausted and disillusioned world ascribe its woes to science and turn from it to philosophy or some mystic religion for happiness? It is hazardous to make predictions, for human beings in distress reach strange conclusions and do strange things. However, it is certain that as yet there has been no decrease in scientific activity. On the contrary, science was never before so highly respected or so eagerly cultivated. Although the primary purpose of much of current scientific work is destruction, a considerable fraction of it will have more important applications after peace returns. It would be easy to dream of an abundance of the things that are now scarce, of better substitutes for these things, of better houses, or more of everything that men want and that science and technology can produce.—Moulton, F. R.: Science and Technology, *Am. A. Advance. Science Bull.*, July 1942, p. 33.

PANEL DISCUSSION ON PEPTIC ULCER

The first five papers in this discussion, by B. R. Kirklin and William C. MacCarty Jr., Rochester, Minn.; J. Earl Thomas, Philadelphia; Samuel Morrison and Maurice Feldman, Baltimore; Harry Shay, Jacob Gershon-Cohen, Samuel S. Fels and Herman Siplet, Philadelphia, and Asher Winkelstein, Albert Cornell and Franklin Hollander, New York, were published in The Journal last week. The following five papers and the discussion from the floor, published in this issue of The Journal, complete the panel discussion on peptic ulcer.

Concluded from page 745

BLEEDING PEPTIC ULCERS

ONE HUNDRED AND FIFTY-ONE FATALITIES

JOHN M. BLACKFORD, M.D.
AND
HORACE E. ALLEN, M.D.
SEATTLE

The Bureau of Vital Statistics of the City of Seattle (U. S. Census 1940, 368,302 population) has death certificates showing that 151 persons during the past seven years (1935-1941 inclusive) have died as the immediate result of hemorrhage from peptic ulcer. This study is based on all such cases recorded in the cross index of the Bureau of Vital Statistics plus some additions and minus some exclusions made after a review of each of the 33,987 death certificates recorded during these seven years. Each case recorded as death due to bleeding from peptic ulcer has been traced back to the hospital record, to the physician in charge or to the family of the deceased in order to get all possible information. The records have usually been found unsatisfactory because the emergency of a fatal hemorrhage makes history taking difficult, and the patient cannot later fill in any deficiencies in the history. Yet the physician in charge should always know that the patient died from gastric bleeding and could hardly fail to note this fact on the death certificate.

ACCURACY OF DIAGNOSIS

Postmortem study was made in more than half (76) of the cases, thanks to the activity of autopsy services in Seattle hospitals. Clinical evidence only has been the basis of the diagnosis in 75 cases.

We have attempted to include only deaths due directly to hemorrhage from peptic ulcer. We have therefore excluded all cases of bleeding from (1) carcinoma of the stomach or esophagus, (2) esophageal varices, (3) hemorrhagic gastritis, (4) hemorrhagic diatheses, (5) sudden fatal gastric hemorrhage, which is the only evidence of peptic ulcer, and (6) gastrojejunal or marginal ulcerations. We believe that the clinical diagnosis of death from bleeding ulcer is at least 90 per cent correct in the cases not coming to autopsy and that the diagnosis in the group of cases coming to autopsy must approximate 100 per cent correct, or that the diagnosis of death due to bleeding from peptic ulcer is correct in about 95 per cent of the 151 cases studied.

Our previously reported cases are included in this study, and a comparison with the formed studies shows no significant variations. Each year the number of fatalities in Seattle has ranged between 17 and 27 cases, and, consistently, one half of the cases have come to autopsy (chart 1). In this series thirteen operations were undertaken as emergency attempts to save life, but only two of these operations were done within forty-eight hours after the beginning of the hemorrhage.

LOCATION OF ULCERS

Seventy-six autopsy reports record the location of the ulcer as gastric in 46 cases and duodenal in 26 cases, in 4 cases the location is not recorded. Thus two thirds of the recorded locations are gastric. This is in startling contrast to the well known clinical predominance of duodenal ulcer as from four to ten times more common than gastric ulcer.

AGE AND SEX

Thirty-one women and 120 men died from bleeding ulcer, showing that one fifth were women (chart 2).

The age incidence was interesting. Only one death occurred in the twenties, one in the thirties and six between the ages of 40 and 45 years, a total of eight deaths among patients under 45. After the age of 45, there is a great increase in the number of deaths. Nearly two thirds of all bleeding ulcer deaths occur in the fifties and sixties, whereas the seventies show more deaths from all causes[1] than any other decade. Most bleeding ulcer deaths occur in the fifties, while the greatest number of deaths from all causes occur in the seventies.

STUDY OF CLINICAL RECORDS

Every effort has been made to obtain all available information, and it is much to be regretted that such information is sometimes very incomplete; nevertheless, we have attempted to get as accurately as possible, and from all sources available, some idea as to the severity of ulcer symptoms in each case, whether serious symptoms were present immediately preceding the fatal hemorrhage and whether there had been a former hemorrhage.

It is a striking fact that in the majority of cases there was not a history of extremely severe ulcer. In a remarkable number there had been really mild ulcer symptoms; many patients did not even know that they had peptic ulcer. One third of the fatal hemorrhages occurred during a period of quiescence of any ulcer symptoms (table 1).

In only 35 cases (23 per cent) was there a history of former hemorrhage; more than three fourths of all fatalities occurred following the first hemorrhage. Studies of peptic ulcer hemorrhage are usually based on records of patients who have recovered from the first hemorrhage, and most reports are therefore greatly concerned with only some 23 per cent of the total

From the Mason Clinic.

Dr. Bryan Newsom of the Division of Vital Statistics of Seattle gave indispensable advice and allowed the use of the facilities and records of his bureau.

Read in the Panel Discussion on Ulcer before the Section on Gastro-Enterology and Proctology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

1. The number of deaths by decades for 1941 is estimated.

number of fatalities from ulcer hemorrhage for the whole population. Surgical discussions usually have emphasized the dangers of recurring hemorrhages; yet, if all deaths are considered, such discussions concern less than one fourth of all deaths from peptic ulcer hemorrhage.

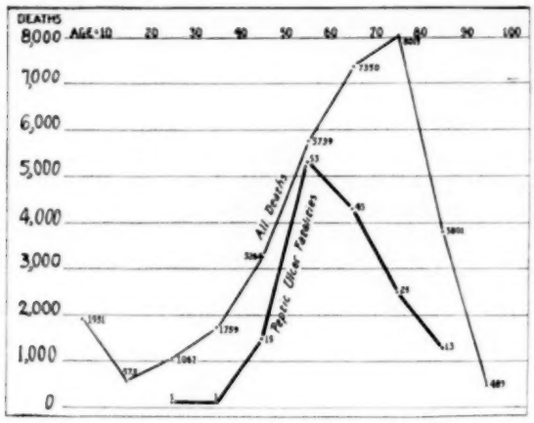


Chart 1.—Fatalities from peptic ulcer hemorrhage and deaths from all causes in Seattle, 1935 to 1941 inclusive.

PLACE OF DEATH

Most of the deaths occurred in hospitals, and almost all deaths studied in the literature are hospital deaths; yet in Seattle 34 (23 per cent) of the deaths occurred at home (table 2). Of these 34 patients, 19 were past 70 years of age.

In our total series there were 38 deaths of patients past the age of 70, and 19, or exactly half this number, died at home. Families evidently do not rush grandpa or grandma to the hospital for an exsanguinating gastric hemorrhage, and the mortality at advanced age is undoubtedly very high.

GENERAL OBSERVATIONS

In our clinical experience bleeding from peptic ulcer is recorded in the history of 20 to 25 per cent of all cases of peptic ulcer and 60 per cent of the first hemorrhages occur when the patient is under the age of 45; no fatality from peptic ulcer hemorrhage has occurred in

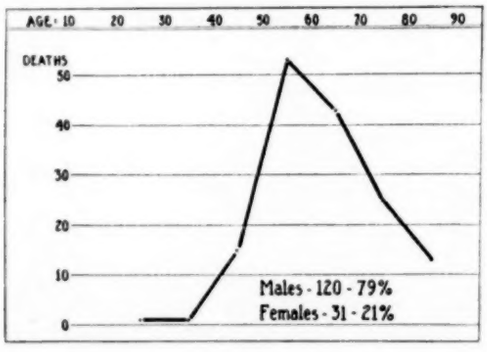


Chart 2.—Age and sex distribution of one hundred and fifty-one fatalities from peptic ulcer hemorrhage.

this younger group. It may be safely stated that fatalities in patients under 45 are rare, whether the patient receives treatment or not, and that in patients under 40 years of age fatalities are almost unknown. After the age of 45, the number of fatalities from hemorrhage increases rapidly. Almost two thirds of all the deaths in this series occurred between the ages of 50 and 70 years, and two thirds of these were from bleeding gastric ulcer. Three fourths of all the fatalities occurred following the first hemorrhage. Autopsy study has almost always shown a large arteriosclerotic, eroded artery in the base of the ulcer; most of the postmortem reports emphasize extensive generalized arteriosclerosis.

Simultaneous acute perforations and massive hemorrhage are rare; 3 such instances have been found in this study, and death was considered due to exsanguination rather than to peritonitis.

These 151 cases have been recorded in the vital statistics of the city of Seattle. It should be mentioned that "metropolitan Seattle" in 1940 had a U. S. Census of 452,639 and that this is the population which is tributary to Seattle hospitals. The city has averaged more than twenty-two deaths each year from bleeding peptic ulcer. These patients might have been seen by any of our more than seven hundred doctors. It is not surprising that many busy practitioners have never seen a patient die from peptic ulcer hemorrhage and that busy gastroenterologists have seen relatively few.

TABLE 1.—*Clinical Records of Fatalities in One Hundred and Fifty-Five Cases*

	Number	Per Cent
Died from first hemorrhage	116	77
Died from later hemorrhages	35	23
Quiescent ulcer symptoms	56	40
Active ulcer symptoms	87	60
Incomplete	8	

TABLE 2.—*Deaths from Peptic Ulcer Hemorrhage*

Hospital	Age: 20	30	40	45	50	60	70		80	
County	48	..	1	2	2	18	14*	3	5†	3
Swedish	21	..	..	..	1	9	5	2	2	2
Providence	10	..	..	2	1	5‡	1‡	..	..	1
Marine	10	..	..	1	1	4‡	4	..	..	..
Seattle General	6	..	..	..	1	2	3	..	..	..
Columbus	9	..	..	..	1	4‡	4‡	..	..	..
Virginia Mason	4	..	..	..	1	2	1	..	..	..
Maynard	2	..	..	..	..	1	1‡	..	..	..
Others	7	..	..	..	..	1	5‡	1	..	..
Home	34	1	..	1	1	7	5	5	7	7
Total	151	1	1	6	9	53	43	11	14	13

* Four operations. † Two operations. ‡ One operation.

Statistics regarding the life saving success of treatments for peptic ulcer hemorrhage have usually not separated the cases into age groups but have reported percentages based on all cases in all age groups.

We are confident that if an attempt is made to segregate the group of older patients with exsanguinating hemorrhages, such a group will have a mortality rate of approximately 30 per cent. If we exclude this group from mortality figures, we exclude those who die at home and those who die promptly before treatment can be administered or considered effective, thus excluding 82 per cent of all fatalities, and we have left a group whose mortality rate approaches the vanishing point.

SUMMARY

A study of all fatalities from bleeding peptic ulcer during seven years in Seattle has shown (1) that 95 per cent occurred in patients past 45 years of age, (2) that 77 per cent occurred following the first hemorrhage, (3) that 22 per cent occurred at home, (4) that 21 per cent occurred in women, and (5) that in the 76 autopsies performed the fatal hemorrhage arose from a gastric ulcer in two thirds (64 per cent) and from a duodenal ulcer in one third (36 per cent).

1115 Terry Avenue.

MEDICAL AND SURGICAL TREATMENT OF HEMORRHAGE FROM PEPTIC ULCER

A CRITICAL EVALUATION OF THE FACTOR OF AGE

JACOB MEYER, M.D.

HERTHA KOHN SORTER, M.D.

AND

HEINRICH NECHELES, M.D., PH.D.

CHICAGO

The treatment of bleeding peptic ulcer is still a controversial subject. Surgical as well as medical authorities have recognized the importance and value of conservative measures.

The most important clinical observations that have led both surgical and medical authorities to follow conservative procedures are as follows: In persons under 45 years of age death seldom occurs from the first hemorrhage. The risk to life from hemorrhage in younger patients is a fraction of 1 per cent, and the risk does not exceed 1 per cent if massive, exsanguinating hemorrhages are considered. No surgical procedure carries a risk of less than 1 per cent. Persons under 45 may have many episodes of severe hemorrhage and recover. The medical treatment of bleeding ulcer, when all ages are considered, gives a lower mortality than surgical treatment.[1]

In contrast to these experiences there is a group of physicians who believe that the treatment should be surgical. The chief of this school is Finsterer,[2] who advocates immediate (twenty-four to forty-eight hours) resection in all cases of massive hemorrhage and reports a mortality of 4.2 per cent. There are others who advocate early operation such as cauterization of the bleeding ulcer area, to be followed later by a suitable operation.

The arguments of this group are as follows: The operative mortality is low if operation is performed early and if the patient is not operated on in a moribund state. In patients past 45 years of age death may occur during the first hemorrhage. In the aged patient an eroded arteriosclerotic blood vessel which fails to contract may be the cause of death, while an operation and ligation of the bleeding vessel gives the only hope of saving the patient in such instances. Perforation often accompanies hemorrhage and is overlooked, thus being the cause for death.

These observations have led physicians and surgeons to regard the age of the patient as the important factor in determining the type of treatment in bleeding peptic ulcer. Our object in this paper is to evaluate the age factor and to compare the results of medical and surgical treatment in similar age groups.

PRESENT REPORT

This report is a study of 154 cases of bleeding peptic ulcer admitted to the Michael Reese Hospital during the past ten years and verified by history, physical examination, laboratory tests and x-ray studies. In 54 cases diagnosis could be confirmed by x-ray examination and in 100 by history, physical examination and laboratory studies.

In the study only group 1 of table 1 will be considered.

"Conservative medical management" signifies an accepted form of medical treatment, namely absolute bed rest, administration of morphine, repeated blood transfusions and twenty-four hour starvation followed by small hourly feedings of a soft diet. The surgical treatment was subtotal gastric resection by a modified Polya technic, as described previously by our group.[3] Resections were performed from a few days to several weeks after the occurrence of hemorrhage.

RESULTS OF CONSERVATIVE MEDICAL TREATMENT

Of 111 patients with bleeding peptic ulcer treated medically 8 died, a mortality of 7.2 per cent. In this group of 111 patients 71 were past 45 years of age. All 8 deaths occurred in this group, so that on the basis of age alone the mortality would be 11.3 per cent. On the basis of severity of hemorrhage [4] and age, there were 38 patients between the ages of 45 and 73 who had severe hemorrhage and 8 of these died, the mortality being 21 per cent.

TABLE 1.—*Classification of Hemorrhages*

Hemorrhages	
Total number of cases	154
Severe	96
Mild	58
Severe Hemorrhage	
Group 1, from gastric and duodenal ulcers	83
Group 2, from alcoholic cirrhosis	2
Group 3, from gastrojejunal ulcer	11

TABLE 2.—*Analysis of All Patients Under Conservative Medical Treatment*

Cases	Severe Hemorrhage	Mild Hemorrhage	Deaths	Mortality, per Cent
111	63	48	8	7.2

Age as a Factor in Conservative Treatment

	Severe Hemorrhage			Mild Hemorrhage	
Age	Cases	Deaths	Mortality, per Cent	Cases	Deaths
45-73	38	8	21	33	0
21-44	25	0	0	15	0

RESULTS OF RESECTION

In this study we are considering only the results of resections in cases of bleeding gastric and duodenal ulcers. Thirty-one patients were operated on: gastric resection was performed on 28, while gastroenterostomy, ileostomy and ligation, and gastrojejunostomy or jejunostomy were performed on 3 other patients. These 3 patients, of whom 2 died, are not considered in this analysis, nor is 1 patient with gastrojejunal ulcer on whom resection was performed and who died.

There were 27 patients with bleeding peptic ulcer regarded as serious who were having sufficient symptoms or complications to warrant resection. An analysis of the histories showed that 17 of these patients had a severe and 10 had a mild hemorrhage. There were 6

Aided by a grant from Mr. Abbott Coburn.
From the Stomach Study Group of Michael Reese Hospital.
The surgical staff of the Michael Reese Hospital gave the authors permission to use their material.
Read in the Panel Discussion on Ulcer before the Section on Gastro-Enterology and Proctology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

1. Blackford, J. M., and Williams, R. H.: Fatal Hemorrhage from Peptic Ulcers, J. A. M. A. **115**: 1774-1776 (Nov. 23) 1940. Hurst, A. F., and Ryle, J. A.: Lancet **1**: 6 (Jan. 2) 1937. Blackford, J. M., and Cole, W. S.: Am. J. Digest. Dis. **6**: 637-641 (Nov.) 1939.

2. Finsterer, H.: Surg., Gynec. & Obst. **69**: 291-298 (Sept.) 1939.

3. Strauss, A. A.; Bloch, Leon; Friedman, J. C.; Meyer, Jacob, and Parker, M. L.: Subtotal Gastrectomy for Duodenal Ulcer, J. A. M. A. **95**: 1883-1889 (Dec. 20) 1930.

4. Severe hemorrhage denotes more or less evidence of shock, apparent blood in the vomitus and stools or tarry stools, a red cell count of 2½ millions or less, and a hemoglobin of 30 per cent or less.

deaths among the 27 patients on whom resection was performed, which gives a total mortality rate of 22.2 per cent. Analysis on the basis of age and severity of the hemorrhage shows that 7 patients were in the age group past 45, and of these 3 died, a mortality rate of 42.9 per cent; while in the age group of 20 to 44, 3 of the 10 patients with severe hemorrhage died, a mortality rate of 30 per cent. The number of patients with mild hemorrhage on whom resection was performed and their age distribution are included in table 3.

TABLE 3.—*Analysis of Patients Treated by Resection*

Resections	Severe Hemorrhage	Mild Hemorrhage	Deaths	Mortality, per Cent
27	17	10	6	22.2

Age as a Factor in Treatment of Bleeding Ulcer by Resection

	Severe Hemorrhage			Mild Hemorrhage	
Age	Resections	Deaths	Mortality, per Cent	Resections	Deaths
45-65	7	3	42.9	5	0
20-44	10	3	30.0	5	0

These data are quite significant, because they indicate a rather high mortality rate among the patients with severe hemorrhage past 45 years of age (42.9 per cent), as well as under 45 years of age (30 per cent), in sharp contrast to the results in similar age groups under conservative medical treatment (21 per cent mortality in the older, and no mortality in the younger group). It is particularly noteworthy that in the group of patients under 45 years of age treated medically the mortality was nil.

Does a severe initial hemorrhage in a person past the age of 45 indicate a grave prognosis? Does a hemorrhage at this age or past this age justify an operative procedure? Seven of our patients past 45 years of age under conservative medical therapy died from the first hemorrhage. Allen [5] and Blackford and Cole [1] state that massive hemorrhages in older patients cause a mortality rate approximating 30 per cent. Allen [5] reported 60 per cent fatalities following the first hemorrhage. Blackford and Williams [1] state that 78 per cent of all deaths occur following the first hemorrhage.

5. Allen, A. W.: Surgery **2**: 713-731 (Nov.) 1937.

In our study of 111 patients with hemorrhage who were treated conservatively and who lived and were well there were 45 who had their first hemorrhage at the age of 45 or past. In 25 the first hemorrhage was regarded as severe and in 20 as mild. The mortality rate from severe initial hemorrhage in our subjects past 45 was 28 per cent (7 deaths). This is a relatively high mortality rate and is in accord with the studies of Blackford and Williams, 30 per cent.[1] On the other hand, 2 of the 3 patients past 45 years of age who died after resection had the first severe hemorrhage at this age or past.

It is important, therefore, to analyze the causes of death of patients treated by conservative medical measures and by resection in the age group of 45 years and over. Such an analysis is made in tables 4 and 5. Of the 8 deaths of patients treated medically, all were men 45 years or older, and the hemorrhage in 7 of the cases was the first one and all were regarded as severe. The autopsy in 3 of these revealed in 1 a perforating ulcer and peritonitis, in another an erosion of a branch of the gastric artery, and in the third an ulcer penetrating into the pancreas with erosion of three blood vessels and aortic insufficiency. It may be inferred that operative intervention such as resection might have saved the lives of these 3 patients.

TABLE 4.—*Analysis of Deaths (Severe Hemorrhage): Conservative Treatment (All Males)*

Case	Age	Duration of Symptoms, Years	Previous Hemorrhages	Roentgen Examination	Transfusions	Autopsy Findings	Comment
2	58	10	None	.....	2	Coronary occlusion; myocardial lesion; arteriosclerosis	Tuberculosis for 25 years
7	60	10	None	.....	..	Chronic gastric and 2 duodenal ulcers with hemorrhage of small artery; tuberculosis of right lung; occlusion medial cerebral artery	Admitted after stroke; arteriosclerosis; hypertension
20	55	5	None	Gastric ulcer 4 years previously	..	Perforating ulcer; peritonitis; coronary sclerosis; emphysema	Refused operation 4 years previously
45	79	4 weeks	None	.....	..	.....	Blood pressure 256; hypertension, nephrosclerosis, uremia, enlarged heart
107	47	..	None	.....	..	Chronic gastric ulcer, erosion of branch of gastric artery	Severe cold
109	47	4	None	Gastric ulcer	1	Mitral stenosis, aortic insufficiency; erosion of 3 vessels; penetration of ulcer in head of pancreas	Might have lived with other treatment
122	71	10	Several	Gastric ulcer	3	.....	Poor condition; bad heart
137	46	3	None	Gastric and duodenal ulcer	2	.....	Exsanguination; heart disease

On the other hand, analysis of the patients who had resection performed and died reveals that of 3 patients past 45 1 died of bronchopneumonia and ileus, 1 of peritonitis and 1 of bronchopneumonia, esophagitis and necrotizing gastritis. The causes of death of 3 patients under 45 years of age were peritonitis, exsanguination and bronchopneumonia. Therefore, it may be concluded that the errors of judgment or diagnosis in the two forms of treatment were approximately the same. At least in this small series it is not possible to say that treatment by resection offers an improvement on the mortality rate in the advanced age group with severe hemorrhage.

It is significant that many patients past 45 showed evidence of coronary sclerosis, arteriosclerosis, hypertension or other complicating disease. These observations are generally regarded as a contraindication to operation, and postoperative death is generally attributed to these associated conditions. There are undoubt-

edly instances in which these associated conditions may be a cause of death, but we have seen a number of older patients who were operated on for gallstones, prostatic tumor or the like and who were presumed to have died from an acute bleeding peptic ulcer. (These studies are being reported.) We stress this point because we feel that, even though our statistics favor the medical treatment of the severe bleeding ulcer, there is need for an awareness of the value of immediate surgical care in a number of cases and that neither the age nor the associated condition (within certain limitations) should deter the surgeon from operation.

DO PATIENTS PAST FORTY-FIVE WHO SURVIVE THE FIRST HEMORRHAGE DIE OF A SUBSEQUENT HEMORRHAGE?

It is apparent from our analysis that approximately 70 per cent of patients who have their first severe hemorrhage at 45 or later survive. The question arises What is the course that these patients pursue? Do they have a hemorrhage later and die? Such information would be of value in determining the type of treatment which would yield the best end result.

There were 17 patients who had their first hemorrhage at 45 years or later from whose record we could analyze whether subsequent hemorrhage occurred. In 3 of these 17 cases the nature of the first hemorrhage was not stated. Two of these patients with severe initial hemorrhage had one subsequent severe hemorrhage and continued to live, and of 4 patients who previously had what was termed mild hemorrhage all 4 had a severe hemorrhage two to three years later and survived. It would appear then that it is both difficult and hazardous to predict the nature of subsequent hemorrhage if the patient past 45 survives the first hemorrhage. Further studies of this group are needed to answer this question definitely.

A severe hemorrhage in a patient with a chronic duodenal ulcer of many years' duration is generally regarded as an indication for surgery. This has been our practice, because in such instances an erosion of a rather large blood vessel is usually the cause of the hemorrhage. It appears, however, that there have been a number of patients who have had repeated severe hemorrhages and who have continued to live and do well on medical treatment. We found a total of 28 patients past 45 years of age who had more than one hemorrhage before and after the age of 45. Three had three previous, 10 had several and 1 patient aged 57 had seven previous hemorrhages. Twenty-four of these patients were 50 years of age or older, and 8 of these were 60 or older. The duration of symptoms of these patients ranged from three to twenty years.

TABLE 5.—*Analysis of Deaths (Severe Hemorrhage): Resection (All Males)*

Case	Age	Number of Hemorrhages	Roentgen Examination	Previous Operations	Transfusions	Autopsy Findings	Comment
9	29	14 in 6 yrs.; symptoms for 6 yrs.	Duodenal ulcer	Splenectomy (Banti's disease ?)	1	Polyposis of stomach; peritonitis, purpura	Chief symptoms: recurring hemorrhages; bad operative risk
11	56	Symptoms for 20 yrs.; no previous hemorrhage	Duodenal ulcer	.....	2	Ileus; bronchopneumonia	Hypertension; asthma
35	43	Symptoms for 19 yrs.; no previous hemorrhage	.....	Gallstone and appendectomy	Several	.....	Exsanguination; earlier or no operation might have saved patient
79	39	Symptoms for 8-10 yrs.; no previous hemorrhage	Duodenal ulcer ?	Paroxysmal tachycardia	2	Bronchopneumonia; gangrene of lung	Shock, temperature 106 F.; exsanguination
108	54	Symptoms for 2 yrs.; no previous hemorrhage; no ulcer found ?	.....	.....	18	Peritonitis	Subphrenic and liver abscess opened; septic temperature; gastric hemorrhage
113	59	Symptoms for 6 yrs.; severe previous hemorrhage	Duodenal ulcer	.....	7	Bronchopneumonia; esophagitis; necrotizing gastritis, enterocolitis	

TABLE 6.—*Age of Patient at the Time of the First and Last Hemorrhage*

First Hemorrhage		Last Hemorrhage		First Hemorrhage		Last Hemorrhage	
Nature	Age	Nature	Age	Nature	Age	Nature	Age
Mild.....	55	Severe.....	58	Severe.....	49	Mild.....	55
Mild	48	Severe.....	51♀	Severe.....	45	Severe.....	51
Mild.....	54	Severe.....	56	Severe.....	49	Severe.....	69
Mild.....	63	Severe.....	65	Not stated.	56	Severe.....	58
Mild.....	58	Mild.....	62	Not stated.	48	Mild.....	51
Mild.....	46	Mild.....	46	Not stated.	56	Severe.....	69
Mild.....	50	Mild.....	60	Not stated.	48	Severe.....	50
Mild.....	58	Mild.....	63	Not stated.	49	Severe.....	51
Mild.....	57	Mild.....	62				

All males, except 1 female.

SUMMARY AND CONCLUSIONS

Our studies revealed that the conservative medical treatment of bleeding peptic ulcer resulted in a mortality rate of 7.2 per cent, irrespective of the age of the patient and the severity of the hemorrhage. Among persons 45 years of age and older with severe hemorrhage the mortality rate was 21 per cent, and among those with initial severe hemorrhage the mortality rate was 28 per cent, while among the patients under 45 with severe hemorrhage there was no mortality.

In striking contrast, the patients with bleeding peptic ulcer treated by resection had a total mortality rate of 22.2 per cent. Among patients past 45 with severe hemorrhage the mortality rate was 42.8 per cent and among those under 45 who had resections the mortality rate was 30 per cent.

Our studies should not give the impression that we oppose surgery in the treatment of bleeding peptic ulcer. Rather, we point out that among those patients treated medically surgery might have saved the lives of at least 3 patients. We agree with the observations of others that the surgeon should be available for severe bleeding ulcers in patients past 45 but that the indication for surgical intervention should be tempered by all the clin-

ical factors rather than by the age of the patient only. These factors are the severity of the hemorrhage, the response to blood transfusions and the general condition of the patient. We emphasize particularly that, according to our data, among patients under 45 years of age operation is best avoided, since conservative medical treatment was attended with no mortality. We recognize the importance of cooperation between the surgeon and the internist in the care of these patients. Surgical treatment—resection of bleeding peptic ulcer—has not in our series shown an improvement in the mortality rate as compared with conservative medical treatment. One must recognize that in the conservative medical treatment there will be instances in which, had operation been performed, the life of a patient might have been saved. It appears equally true, however, that considering the errors of diagnosis there are, to say the least, as many patients who might have died following surgery. Our observations indicate that many patients past 45 have repeated hemorrhages from peptic ulcer and continue to live on medical treatment for many years.

Such associated conditions as hypertension, coronary sclerosis and arteriosclerosis should not deter the internist or the surgeon from recommending operation in selected cases of severe bleeding peptic ulcer.

55 East Washington Street.

THE SELECTION OF OPERATION FOR PATIENTS WITH GASTRIC AND DUODENAL ULCER

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The first consideration when discussing operations on patients with gastric and duodenal ulcer is the fact that an ulcer, whether gastric or duodenal, constitutes a medical problem, and surgery is resorted to only for the complications resulting from an ulcer. The emergency surgery for the acute perforation, or occasionally for massive hemorrhage, and the elective surgery for the chronic ulcer should not comprise over 20 per cent of the patients treated.

In this presentation, the conclusions have been drawn from the combined medical and surgical ulcer clinic, which was established in the Fourth Division at Bellevue Hospital in January 1928. The clinic has always been manned by internists and surgeons, and it has been our feeling at the hospital at all times that medical management was the treatment of choice in all uncomplicated ulcers and that surgery should be resorted to only in the complicated cases. One should realize that the patients treated are from a municipal hospital and would come nearer representing the population of the country at large than patients from a higher economic status. In this discussion private patients are not included nor are patients from other hospitals, since this is an attempt to evaluate the cycle of the ulcer patients over years of observation. During the past fourteen years, or from 1928 to 1941 inclusive, we have had occasion to treat 1,256 patients suffering from gastric or duodenal ulcer. These patients have made 24,324 visits, or an average of 19 visits a patient, and we have had occasion to be present 95 per cent of the time when the clinic was conducted. We are therefore speaking from personal observation of the patients and not from a statistical evaluation of figures taken from a record room alone.

Of the patients, 89 per cent had duodenal and 11 per cent had gastric ulcer. They averaged 35.1 years of age; 88 per cent were males and 12 per cent were females. When these patients were registered there were 263 who had had previous operations performed, 155 for acute perforations, 20 for massive hemorrhage and 88 for chronic ulcers. That leaves 993 patients with unoperated ulcers registered in our clinic. Of this number, 493 had received no previous medical treatment while 500 had received some form of medical treatment or advice. The duration of these patients' symptoms averaged four and one-half years. Of the 993 patients not operated on during the fourteen year period 66 per cent had been improved by medical management, 24 per cent were not improved and 10 per cent have been followed three months or less, which is insufficient time to evaluate the progress of their disease. We have advised 140 patients out of this group to be operated on, which is 14 per cent of the total number of patients who had not been operated on.

From observations in our clinic the prime misunderstanding as to the surgical indications and contraindications hinges around one fundamental point, namely the duration of symptoms before medical advice is sought. Obviously a patient seen in the first few months of the disease offers a simpler problem for medical management than does one seen a number of years after onset of the disease. We wish to reiterate, our patients had suffered from the disease for four and one-half years before seeking treatment.

We have been thoroughly convinced after following the cases in our clinic that medical management in the uncomplicated ulcers gives better results than does surgical management in similar cases. There comes a time in the life cycle of certain patients with ulcer when medical management ceases to be effectual in controlling their symptoms, and this event ocurs when the ulcer has become adherent to an adjacent viscus, so that one is not dealing with a simple ulcer but one which has perforated the wall of the stomach or duodenum and the floor of the ulcer is formed by an adjacent viscus. The organ most frequently involved by this process is the pancreas, but we have seen both a gastric and a duodenal ulcer in patients who have not been operated on perforate through the wall of the organ and into the transverse colon. Likewise, we have seen an ulcer perforate from the duodenum into the fundus of the gallbladder and from the duodenum into the common duct.

Therefore, it is well for the internist to realize that in cases in which there has been thorough medical treatment and the ulcer has failed to respond surgery must be definitely advised so as to reduce to a minimum the complications enumerated. We have recommended operations to only 14 per cent of the total number of patients not operated on who have been encountered in a municipal hospital. It would seem fair to assume that surgery is not indicated in more than 20 per cent of the total number of these patients under observation.

Read in the Panel Discussion on Ulcer before the Section on Gastro-Enterology and Proctology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

There are two complications which are most likely to occur in unoperated ulcers, namely acute perforations and massive hemorrhage. Of the total number of patients registered in our clinic, 1,256, there were 155 with acute perforations, 84 with massive hemorrhages and 93 with mild hemorrhage. Surgery had been advised in only 39 of the 84 cases of massive hemorrhage and 36 of the 93 cases of mild hemorrhage.

It is necessary for patients to remain under medical treatment for long periods, and our patients have averaged two years under active medical treatment. As previously stated, 10 per cent of the 993 cases have been followed three months or less and have been excluded from evaluation owing to the limited period of observation.

Only the pathologic process encountered by the senior author is reported, since this has a most significant bearing on the type of operation that should be performed. The five year period from 1928 to 1932 was the time when gastroenterostomy was the operation of choice. It was our feeling that in properly selected patients one encountered good results from this method of surgical treatment. We have evaluated our surgical results on three different occasions. In 1934 we [1] reported 96 gastroenterostomies followed on an average of 4.2 years, and in that report 16.7 per cent of the ulcers encountered were gastrojejunal ulcers. At the same time only 37 per cent of the patients were cured, 12 per cent were benefited and 51 per cent were unimproved. A number of the operations in this series antedated the starting of our clinic in 1928 and the cases were merely followed in the clinic. In 1940 we [2] reported on 106 gastroenterostomies followed for 7.1 years and found at that time that only 24.5 per cent of the patients were cured. At this time the diagnosis was gastrojejunal ulcer in 18.8 per cent, and in 5.6 per cent the roentgen findings and symptoms suggested a gastrojejunal ulcer, which made a total of 24.4 per cent of the cases in which there apparently was suffering from gastrojejunal ulcer. One would naturally ask why we encountered such a high percentage of failures and it is our feeling that this is directly related to the pathologic process which was encountered at the time of the original operation.

We are convinced that gastroenterostomies done on uncomplicated ulcers will give a far higher percentage of good results than those which we have reported because one would be dealing with an ulcer in the early stages which has not penetrated the wall and involved the adjacent viscus. Therefore the problem is merely healing of the primary ulcer, and if one is fortunate to avoid a gastrojejunal ulcer the results will be quite satisfactory. But, likewise, excellent results are obtained in this type of case from medical management, and surgery is not indicated.

The discussion of the surgical management of an ulcer rests on the pathologic process encountered, and it is difficult to evaluate the pathologic process in the adjacent viscus unless a subtotal resection has been performed. During the five year period from 1928 to 1932 we had occasion to do twenty-nine gastroenterostomies for duodenal ulcers. The pathologic process encountered in these cases was described as being an anterior duodenal ulcer in 14 instances, posterior in 13 and both anterior and posterior in 2. The age of the patient and duration of the symptoms were the same for the gastroenterostomy series and the subtotal series, namely 37.1 years for the former and 37.1 years for the latter, and the symptoms were present for 5.4 years in the former and 5.3 years in the latter. One would expect to encounter similar pathologic processes in the two groups, but the subtotal findings did not confirm this.

Evaluation of the 102 subtotal resections which had been done from 1933 to 1941 inclusive revealed that 27 patients had gastric ulcers and 75 had duodenal ulcers, or 27 per cent of total operations were for gastric ulcers. Patients referred for operation constituted 14 per cent of all who had not been operated on. The point is worth emphasizing, as it is our feeling that an uncomplicated gastric ulcer responds satisfactorily to medical management and that the fear of malignant degeneration in gastric ulcer has been greatly overemphasized in an evaluation of the clinical course of the gastric ulcer under medical management over a period of years.

A clinician should not enter into controversy as to the histologic diagnosis of a gastric ulcer versus a gastric malignant growth, as it is well known that different schools of pathologists differ widely as to what constitutes malignant degeneration in the cells. A patient suffering from a gastric lesion whose roentgen examination, clinical course and gastroscopic findings suggest that the lesion may be malignant should be operated on immediately, and that has been our policy. But in the case of a gastric lesion in which there has been no difficulty in making the diagnosis between an ulcer and a carcinoma, the patient is handled by medical management, and with fourteen years of clinical experience we have no reason for regrets.

As the ulcer problem, to a great extent, is the problem of duodenal ulcer, which in our series constituted 89 per cent of the total ulcers encountered, the majority of ulcers which come to operation will be duodenal lesions. It is in this group of patients that so much misunderstanding still exists, and after the abdomen has been opened it is difficult, if not impossible, for one to be sure whether the pathologic process encountered represents an anterior duodenal ulcer, a posterior wall ulcer or an ulcer on both anterior and posterior walls. In a series of 75 patients with duodenal ulcers coming to subtotal resections there were 60, or 80 per cent of the total number, with posterior wall ulcers, and all these patients had a definite associated chronic pancreatitis, and usually this was of an extensive degree. In 10 instances, or 13 per cent, there was both an anterior and a posterior wall ulcer, and in 5 cases, or 7 per cent of the total, there was a single anterior wall ulcer. In all cases of the double ulcers there was likewise an associated pancreatitis. These figures would tend to prove that the anterior ulcer, if treated medically, will respond satisfactorily to medical management and will rarely come to surgical intervention unless for acute perforation and very occasionally for massive hemorrhage.

In the case of duodenal lesion it has been our policy to recognize only one true indication for recommending surgery in the chronic ulcer. That is uncontrollable

1. Church, R. E., and Hinton, J. W.: A Study of 671 Cases of Peptic Ulcer with Special Emphasis on 114 Postoperated Cases, New York State J. Med. **34**: 1079 (Dec. 15) 1934.
2. Church, R. E., and Hinton, J. W.: The Results of Gastroenterostomy in Gastric and Duodenal Ulcers, Surgery **7**: 647 (May) 1940.

pain, which is not due to the ulcer but to the associated pathologic condition which has just been discussed, namely chronic pancreatitis. Seldom have we found it necessary to recommend surgical intervention for massive recurrent hemorrhage without pain. The long-standing ulcers presenting severe pain and massive hemorrhage constitute definite indications for surgical intervention. But the massive hemorrhage without pain in a duodenal ulcer seldom, if ever, should have surgery recommended.

As previously stated, we have referred for operation 14 per cent of the patients who had not been operated on. There is one type of case at the present time in which operation is so frequently advised that in our experience is not justified, namely the obstructing duodenal ulcer without pain. From our observation, the so-called stenosing or obstructing duodenal ulcer which does not involve severe pain never needs to be operated on provided previous surgery has not been done. These patients can be handled most satisfactorily by diet and antispasmodics.

During the past nine years, from 1933 to 1941 inclusive, we have not seen a case in which gastroenterostomy has been indicated. We can conceive of only one condition which is a true indication for gastroenterostomy and that is one in which the patient has previously had a perforated duodenal ulcer with a simple closure and a scar tissue stenosis of the pylorus has resulted from the operation. This type of case can be most satisfactorily handled by gastrojejunostomy. We have encountered 1 such case, but that antedated 1933. These patients would be essentially free from pain, but one must remember that these lesions do not conform with so-called primary obstructing or stenosing ulcer but result from previous operative intervention.

The question of mortality in stomach surgery always is a matter of prime importance. In a series of 102 cases of subtotal resection done by the senior author there were five deaths; one of these can be attributed to pneumonia while the other four can be attributed to peritonitis. It should be emphasized that of these 102 patients, 33 had had previous gastric surgery, including eight patients having had perforated ulcers which necessitated subtotal resections at a later date for the relief of pain. Again, in considering mortality, one must remember that this group of patients is taken from a municipal hospital where the patients seldom had special nurses; we wish to stress that the average postoperative hospital stay for the 102 cases was nineteen days.

In our most recent review we [3] analyzed the end results of 97 cases of subtotal resection from our clinic; 64 were found to be cured and 24 improved. This group of postoperative patients made 1,822 visits, or 18.8 visits per patient. It is our feeling that evaluation of results in stomach surgery, unless the patients are personally seen at frequent intervals, will give very misleading results. Patients will frequently have complaints which after a few months they have forgotten, and if they are seen only at long intervals these flare-ups are not remembered. These 104 patients averaged 2.9 years of postoperative observation.

130 East Seventy-Ninth Street—115 East Sixty-First Street.

3. Church, R. E., and Hinton, J. W.: Follow-up Results in Subtotal Resection for Gastric Ulcer, to be published.

TREATMENT OF JUXTAPYLORIC ULCER WITH OBSTRUCTION

COMBINED USE OF THE ALUMINUM HYDROXIDE DRIP AND THE WANGENSTEEN ASPIRATOR

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Pyloric obstruction, partial or complete, is one of the common handicaps in the prompt and effective medical management of active peptic ulcer. Vomiting of hyperacid material, distention, pain, anorexia and general distress preclude any adequate medication. The first recourse in the acute emergency is suction drainage, which gives striking relief. This alone, however, leaves the acidity unneutralized, leaves the ulcer untreated and, if used too long continuously, is depleting. The logical supplement is intermittent suction combined with the continuous astringent and antacid drip treatment. This may be done very simply by connecting the intragastric tube to a Y tube one arm of which leads to the drip apparatus and the other to a Wangensteen aspirator. By clamping off alternately one and the other, one can regulate at will the amount of suction or drip treatment.

In the practical application of this method suction is used until the stomach is emptied and the abdomen deflated, and then it is used only ten minutes out of each hour. The nurse in charge is instructed simply to clamp off the suction arm and unclamp the drip arm at the specified intervals. The second day ten minutes of suction and two hours of drip are used, the third day four hours, the fourth day eight to twenty-four hours, the length of the period being guided by evidences of retention in the aspirated material. When the suction arm can be clamped off for twenty-four hours without retention or distress the rigid intragastric tube may be removed and the soft collapsible tube used for the remainder of the aluminum hydroxide drip treatment.

Feedings are started early in this method—liquid while the suction is used and later frequent bland feedings as in the usual drip regimen previously published.[1] Sedatives should be used liberally in doses such as ½ to 1 grain (0.03 to 0.06 Gm.) of phenobarbital every four hours. Antispasmodics are relied on to a less degree, although novatropine $\frac{1}{12}$ grain (0.005 Gm.) every four hours is usually helpful. Vitamins B and C are given hypodermically. Liquid petrolatum 1 ounce (30 cc.) two or three times a day is important to avoid impactions, and all opiates are avoided. One fourth of magnesium trisilicate suspension may be used with three fourths of aluminum hydroxide as a further guard against constipation.

Eighty per cent of ulcers are within 1 inch of the pylorus. Approximately 85 per cent of pyloric obstruction is due to spasm and edema. This is usually associated with hyperacidity, hypermotility and pain, enhancing the tendency to chronicity, hemorrhage, penetration and perforation. Hence the importance of prompt control in the acute exacerbation or recurrence of ulcer, especially with vomiting, since this is rarely a symptom of uncomplicated ulcer. Partial obstruction is frequent and easily overlooked. Chronic

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1. Woldman, E. E., and Rowland, V. C.: Am. J. Digest Dis. & Nutrition 2:733 (Feb.) 1936.

cicatricial stenosis at the pylorus with dilatation and low acidity contrasts strongly with pyloric obstruction, is entirely surgical and is not referred to in this discussion.

Hemorrhage in obstructive ulcer not infrequently results after a number of days of vomiting and straining. After the acute stage, hemorrhage seems to be no contraindication to the use of the method described. Suction is of course used cautiously. The aspirate indicates at once any fresh bleeding. This usually does not occur when erosion and digestion are suspended by constant neutralization. The continuous bleeding of the larger spurting artery protruding from the base of an ulcer of course precludes the use of the tube.

The severe ulcer with peritoneal irritation, distention or suspected subacute perforation, after the surgical stage and treatment by starvation, infusions and siphonage, may be managed advantageously by the combined drip and siphonage method. Here, however, much more caution is necessary. All signs of peritonitis must be allowed to disappear before any drip or feedings are started.

If there is the added suspicion of a malignant condition by x-ray examination in an obstructing prepyloric lesion, a therapeutic test may be more promptly and effectively carried out by the combined method. Presumptive evidence is again obtained by the characteristics of the aspirate, the rates of subsidence of obstruction and of disappearance of pus and blood. These changes are surprisingly rapid in purely inflammatory lesions. After control of spasm and edematous obstruction and healing of an open ulcer many of these patients may go for years without recurrence, provided, of course, they cooperate as after any ulcer management. Persistence of obstruction for longer than a week suggests advanced scarring or a malignant growth. In this event the patient is prepared by the siphonage in the best way for gastroscopy and follow-up roentgen therapy or surgery.

It should be borne in mind that considerable fibroplastic thickening occurs in the more prolonged case of partial obstruction. After satisfactory medical treatment, the x-ray examination may show a residual deformity suggestive of malignant growth or of healing of the peptic ulceration in an initially malignant lesion. It takes time even after healing of the ulcer for the inflammatory thickening to absorb. In 1 such case after aluminum hydroxide drip therapy resection was carried out on the suspicion of carcinoma in the second x-ray examination. The specimen showed a healed shallow crater with inflammatory induration around the rim. The pathologist at the clinical-pathologic conference demonstrated the continuity of newly formed epithelium over the floor of the crater and no suggestion of a malignant condition.

When convincing evidence of a malignant growth cannot be obtained by roentgen examination and gastroscopy, it seems justifiable in the light of the end results of radical surgery such as those presented here two years ago by Dr. Sara Jordan [2] to keep the suspected ulcer under conservative management for a reasonable time, to make a series of tests for occult blood in the stool, to use continuous drip treatment a second time if necessary and to repeat the x-ray examination. Since the danger of malignant degeneration occurring in an initially benign ulcer is rather remote, the risk of delaying operation in primary carcinoma is probably less than the risk of radical surgery and its sequelae. Persistent painstaking follow-up, however, is necessary to be safe with conservative management.

The obstructive factor, more commonly than is realized, contributes to the complications and the simulation of a malignant condition. Combined drip and siphonage treatment is especially adapted to the control of this factor.

CONCLUSIONS

1. Pyloric obstruction is an important factor in the failure of prompt and effective medical control of active ulcer. Obstruction increases also the tendency to hemorrhage, late perforation and intractability.

2. The combined suction and aluminum hydroxide drip treatment may be instituted at once, gives prompt relief, provides continuous antacid and astringent therapy, is flexible and is adaptable to the needs of the individual case.

3. This method gives more prompt and decisive information in regard to the presence of cicatricial stenosis or a malignant growth and at the same time prepares the patient for gastroscopy, follow-up roentgen therapy or surgery when necessary.

2. Jordan, Sara M.: End Results of Radical Surgery of the Gastrointestinal Tract, J. A. M. A. **116:** 586 (Feb. 15) 1941.

JEJUNAL ULCERS AND RECURRENT HEMORRHAGES

AFTER PARTIAL AND SUBTOTAL GASTRECTOMY FOR PEPTIC ULCER

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Postoperative jejunal ulcer occurring after subtotal gastric resection is a tragic disappointment in the treatment of peptic ulcer.

The hope that this radical operation would solve the problem of postoperative jejunal ulceration which had brought gastroenterostomy into disfavor has been displaced by the realization that this complication can follow any operation which joins gastric mucosa to small intestinal mucosa.

Partial gastrectomy was proposed as a more effective means of reducing gastric acidity, which has been shown conclusively to be an important factor in the production of postoperative ulcerations in the jejunum. At first the procedure appeared to be highly successful, since routine gastric analyses after partial gastrectomy seemed to indicate that anacidity had been achieved in nearly all cases. However, Klein [1] found that the gastric secretory response to a test meal was delayed in the partially resected stomach and that many cases, apparently anacid in a test lasting one hour, did produce appreciable quantities of free acid if the test was prolonged to a three hour period. Klein, Aschner and Crohn [2] found that immediate postoperative anacidity was present in 77 per cent of the gastric ulcer cases, but this was found in only 38 per cent of the patients operated on for duodenal ulcer. Berg reported that only 13 per cent of the patients with high preoperative acidity were rendered anacid by subtotal gastrectomy without vagotomy.

From the Department of Gastroenterology, the Lahey Clinic.
Read in the Panel Discussion on Ulcer before the Section on Gastro-Enterology and Proctology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

1. Klein, Eugene: Gastric Secretion After Partial Gastrectomy, J. A. M. A. **89:** 1235 (Oct. 8) 1927.

2. Klein, Eugene; Aschner, P. W., and Crohn, B. B.: The End Results of Partial Gastrectomy for Primary Gastric and Duodenal Ulcers, Tr. Am. Gastro-Enterol. A. **36:** 197, 1933.

At the Lahey Clinic 141 patients were given tests postoperatively by means of a single specimen of gastric contents taken forty-five minutes after an Ewald test meal. Of this group 96, or 68 per cent, showed no free acid with this technic. However, when histamine was used as a gastric stimulant 16 out of 23 patients with a negative response to the Ewald meal were found to have free acid. Although the bulk of the patients were not given tests with histamine, these findings indicate that the secretion of free acid persists after subtotal gastrectomy in an appreciable number of cases, provided the stimulation is adequate. Certain mechanical factors such as the rapid emptying of the gastric stump through a wide stoma or the reflux of jejunal contents by the same route tend to make anacidity more apparent than real. The highest percentage of cases showing free acidity is obtained by a technic which provides for keeping the patient lying flat in the supine position while fractional specimens of gastric contents which pool in the fundus are withdrawn at fifteen minute intervals for at least two hours after stimulation with histamine. Figure 1 shows a typical response to an Ewald meal and indicates that only a small amount of free acid is produced during the first hour. When the test was continued with the additional stimulus of histamine, the free acid rose to 90 and showed no tendency to fall within the second hour.

The emphasis on postoperative acidity is due to the fact that of all known possible factors persistent hyperacidity after operation stands out as the most important one bearing on the etiology of postoperative jejunal ulcer.

Except in rare instances jejunal ulcer is not a primary disease but is a lesion produced by the operative changes in gastrointestinal physiology. It more nearly corresponds with the experimental ulcer of Mann and Williamson than do the primary ulcers in either the stomach or the duodenum. Mann [3] recognized three etiologic factors: the traumatic factor, the acid factor and the factor of tissue susceptibility. Trauma may well be important in postoperative jejunal ulcer by causing the initial break in the jejunal mucosa. Forceful expulsion of more or less abrasive food material by the muscular stomach with direct impingement on the soft, velvety, easily traumatized small intestinal mucosa is likely to produce erosions which could be turned into ulcers by the action of active gastric juice. These injuries probably occur just as frequently in patients operated on for gastric ulcer or for carcinoma, yet it is well known that postoperative ulcers do not develop, apparently because postoperative anacidity is practically constant.

Tissue susceptibility apparently increases with the distance from the pylorus, indicating that mucous membrane that is not accustomed to the direct exposure to gastric juice is more prone to ulceration. Little is known regarding variations in tissue susceptibility between individuals. Therefore, persistent acidity after operation remains the only known factor found consistently in relation to postoperative ulcer.

The incidence of jejunal ulcer following subtotal gastrectomy for peptic ulcer is not accurately known, and the reports that are available, like those pertaining to the incidence of jejunal ulcer after gastroenterostomy, vary widely. Reports of one or more instances of

TABLE 1.—*Clinical Features of*

Case	Name	Sex	Age	Preoperative Lesion	Preoperative Acidity After Ewald Meal	Operation	Postoperative Regimen	Interval Before Onset of Symptoms
1	Valenti	♂	37	Duodenal and jejunal ulcer	Free HCl 68, total 120	Finsterer resection ⅓ of stomach; posterior Polya	Fair diet; smoking +	11 months
2	Whitney	♂	49	Duodenal ulcer	Free HCl 54, total 81	Finsterer resection ¾ of stomach; anterior Polya	Good diet, no smoking	2 months
3	Palmer	♂	48	Duodenal ulcer	Free HCl 57, total 74	Finsterer resection ⅔ of stomach; anterior Hofmeister	Fair diet, moderate smoking	21 months
4	Raleigh	♂	37	Duodenal and jejunal ulcer	Free HCl 69, total 82	Finsterer resection ⅝ of stomach; anterior Hofmeister	Fair diet, no smoking	4 months
5	Hunt	♂	50	Duodenal and jejunal ulcer	Free HCl 26, total 68	Finsterer resection ¾ of stomach; anterior Polya	Good diet, no smoking	5 months
6	Montana	♂	38	Duodenal ulcer	Free HCl 48, total 64	Finsterer resection ⅘ of stomach; anterior Hofmeister	Fair diet, moderate smoking	7 months
7	Campbell	♂	49	Duodenal ulcer	Free HCl 72, total 91	Finsterer resection ¾ of stomach; anterior Hofmeister	Good diet, no smoking	9 months
8	Quinn	♂	40	Duodenal and jejunal ulcer	Free HCl 47, total 65	Resection 1st portion of duodenum and ¾ of stomach; anterior Hofmeister	Good diet, moderate smoking	3 months
9	Calise	♂	45	Duodenal ulcer	Not done	Resection 1st portion of duodenum and ⅘ of stomach; anterior Hofmeister	Normal diet, moderate smoking	9 months
10	Leader	♂	48	Duodenal ulcer	Free HCl 67, total 82	Resection 1st portion of duodenum and ⅔ of stomach; anterior Hofmeister	Normal diet, moderate smoking	20 months
11	Samuel	♂	46	Duodenal and jejunal ulcer	Free HCl 65, total 81	Resection 1st portion of duodenum and ¾ of stomach; anterior Hofmeister	Fair diet, moderate smoking	28 months
12	Tickelis	♂	46	Duodenal ulcer	Free HCl 52, total 62	Resection 1st portion of duodenum and ⅗ of stomach; anterior Hofmeister	Good diet, no smoking	1 month

3. Mann, F. C.: The Chemical and Mechanical Factors in Experimentally Produced Peptic Ulcer, S. Clin. North America **5**: 753 (June) 1925.

jejunal ulcer after partial gastrectomy are fairly common. Hurst [4] collected 100 cases from the literature. Gatewood [5] reported 3 instances of recurrence in a series of 30 patients who had subtotal gastrectomies. Garrett reported 2 in 26. Klein, Aschner and Crohn [2] found an incidence of 4.3 per cent in a series of 210 patients operated on for duodenal ulcer.

This report includes a study of the postoperative follow-up in 222 surviving cases of subtotal gastric resection for peptic ulcer. These patients were operated on at the Lahey Clinic before Nov. 1, 1941, and follow up data have been collected and evaluated by the department of gastroenterology in all but 5 cases (table 2).

There were 49 patients subjected to subtotal gastrectomy for gastric ulcer. Not a single one in this group presented any sign or symptom which could be considered evidence of a recurrent ulcer. The gastric acidity was measured postoperatively in 30 cases and a small amount of free acid was found in 3.

The total incidence of jejunal ulcer and postoperative hemorrhage was found in the group in which the original lesion was a duodenal ulcer. Some of these patients had had surgical treatment before and already had a jejunal ulcer after a gastroenterostomy. In the 173 cases in this group, which included 27 cases of jejunal ulcer and gastroenterostomy before resection, there were 6 cases, 3.4 per cent, in which jejunal ulcer followed subtotal gastrectomy and was verified by laparotomy. In fairness to all points of view, only those jejunal ulcers which were found at operation were considered verified ones.

There were 6 additional instances in which a clinical diagnosis of jejunal ulcer was made and was supported by the roentgen demonstration of a pocket in the jejunal wall.

There was a third group which consisted of 8 patients who experienced one or more gross hemorrhages after operation but in whom no ulcer was demonstrated. These were diagnosed simply as postoperative hemorrhage.

When the 27 cases of duodenal ulcer plus gastroenterostomy plus jejunal ulcer were considered as a separate group, there was found evidence of recurrent jejunal ulceration after gastric resection in 5 cases and postoperative hemorrhage occurred in 1.

The operative technic and the surgical methods used in these cases have been described by Lahey and Marshall.[6] Briefly, in most cases the operation consisted of resection of the first portion of the duodenum and about three fourths to four fifths of the stomach, with a modified Hofmeister anastomosis.

In 30 cases, because of technical difficulties and their attendant risks, the duodenum and pylorus were not included in the resection, the distal transection being placed proximal to the pylorus, as recommended by Finsterer in cases in which removal of the duodenum is too dangerous. In this group there were 7 recurrent ulcers and 3 cases of postoperative hemorrhages. This relatively high incidence of unsatisfactory results has led to speculation regarding the role of the pylorus and antrum, since there is evidence that there is a hormone evolved in the pars pylorica which stimulates the fundic glands to produce acid. However, actual evidence indi-

Twelve Cases of Jejunal Ulcer

Symptoms	Postoperative Acidity	Roentgen Examination	Treatment	Reoperation	Results
Epigastric pain chiefly at night relieved by food, made worse by physical activity	Free HCl 52, total 76	Rigid stroma, crater in distal loop	Medical regimen in hospital	.....	Symptoms relieved; x ray negative
Pain in right upper quadrant radiating to back relieved by food; made worse by walking; loss of weight; anemia	Free HCl 80, total 93	Large crater in jejunum	Medical regimen in hospital	.....	Recurrent pain; severe hemorrhage
Sudden severe pain in left costal margin without relation to meals, relieved by soda	Free HCl 29, total 53	Crater in jejunum opposite stroma	.....	Resection of ½ of stump, excision of jejunal ulcer, anterior Polya	Relieved; no free acid after histamine
Pain, hemorrhage, intestinal obstruction	Free HCl 99, total 126	Crater in jejunum	.....	Resection of all but ⅕ of stomach; excision of jejunal ulcer	Recurrence of jejunal ulcer requiring reoperation
Severe back pain not relieved by food or alkali	Free HCl 28, total 36	Crater in jejunum	.....	Excision of large jejunal ulcer penetrating pancreas	Died of postoperative hemorrhage
Severe pain in epigastrium radiating to back; some relief from food	Free HCl 20, total 63	Rigid stoma; ulcer seen by gastroscopy		Resection of pyloric end of stomach; excision of jejunal ulcer	Relieved
Epigastric distress; several severe hemorrhages	Free HCl 60, total 78	Crater in jejunum	.....	Resection of part of stump; excision of jejunal ulcer	Relieved; free acid present
Severe umbilical pain radiating to back; night pain relieved by food; hemorrhage	Free HCl 24, total 42	Crater in jejunum	Medical regimen in hospital; long period at home	.....	Relieved
Epigastric distress; 3 gross hemorrhages	Free HCl 69, total 83	Crater in jejunum	Medical regimen at home	.....	Some relief
Pain in left upper quadrant chiefly at night, relieved by food	Free HCl 106, total 120	Crater in jejunum	Ambulatory regimen	.....	No relief
Epigastric pain; hemorrhage	Free HCl 26, total 40	Crater in jejunum	Treated elsewhere	.....	.....
Severe epigastric pain; hemorrhage	Free HCl 61, total 70	Crater in jejunum	.....	Resection of portion of stump; excision of jejunal ulcer	Recurrent pain relieved by medical regimen; free acid present

4. Hurst, A. F.: The Late Results of Partial Gastrectomy for Gastric and Duodenal Ulcer, Lancet **2**: 680 (Sept. 29) 1928.
5. Gatewood: Results of Operation for Peptic Ulcer, Tr. Am. Surg. A. **48**: 142, 1930.
6. Lahey, F. H., and Marshall, S. F.: Technic of Subtotal Gastrectomy for Ulcer, Surg., Gynec. & Obst. **69**: 498 (Oct.) 1939.

cating that the nonremoval of the pyloric end of the stomach was solely responsible for the recurrence of ulcer is rather meager. A postoperative gastric analysis after an Ewald meal was done in 24 cases of this group with the finding of free acid in 13 cases, which is approximately the same proportion as that found in

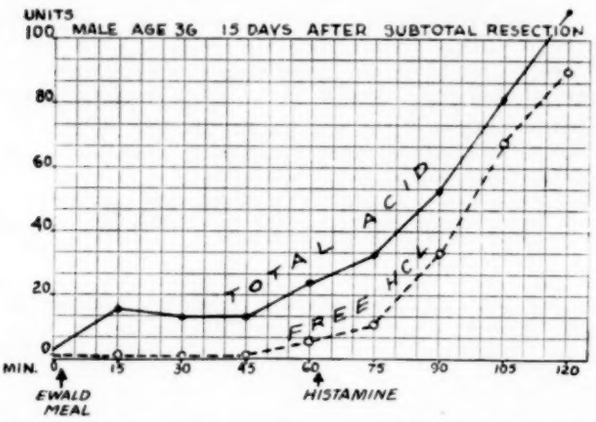


Fig. 1.—Gastric secretory response to an Ewald meal and to histamine fifteen days after subtotal gastric resection for duodenal ulcer.

the combined group of duodenal ulcer cases. The fact that the surgeon had decided against an attempt to remove the pylorus was indication that this group represented a particularly severe grade of peptic ulcer and might be expected to show a higher percentage of recurrences.

The clinical features of jejunal ulcer after partial gastrectomy do not differ from those of jejunal ulcer after gastroenterostomy.

The lesion is a deep penetrating crater usually situated in the wall of the jejunum directly opposite the stoma or in the efferent limb not far from the anastomosis. The most important feature of the symptoms of this type of lesion is severe pain, which is usually located in the back but occasionally in the left flank

TABLE 2.—*Incidence of Postoperative Jejunal Ulcer and Hemorrhage After Subtotal Gastrectomy for Peptic Ulcer (Two Hundred and Twenty-Five Cases)*

Operation for gastric ulcer		
Total number of cases	49	
Jejunal ulcers	0	
Postoperative hemorrhage	0	
Operation for duodenal ulcer		
Total number of cases (includes 27 cases with jejunal ulcer after gastroenterostomy *)	173	
Jejunal ulcers proved by operation	6	(3.4%)
Jejunal ulcers diagnosed clinically and by x-ray, no operation	6	(3.4%)
Postoperative hemorrhage, no ulcer demonstrated	8	(4.6%)

* Duodenal ulcer combined with jejunal ulcer (gastroenterostomy for duodenal ulcer)

Total number of cases	27
Jejunal ulcers proved by operation	2
Jejunal ulcers diagnosed clinically and by x-ray, no operation	3
Postoperative hemorrhage, no ulcer demonstrated	1

or left side of the abdomen. The characteristic relationship to food intake shown by peptic ulcer is often absent. In fact, the character of the pain is apt to divert the physician's attention away from the gastrointestinal tract. The pain comes on at irregular times, often related to body movements, position or exertion. Sometimes the radiation is such as to suggest left ureteral colic. Left sided pleurisy may be thought to be the cause of the pain. The severity of the pain is often striking. It may come on suddenly as an excruciating knifelike thrust requiring morphine for relief. Gross hemorrhage occurred in 6 out of 12 cases and chronic occult bleeding was present in all. The onset of symptoms in this type of case occurred as a rule from one to nine months after operation. In only 3 cases in the group was the onset later than a year after operation.

The clinical features of 12 cases of jejunal ulcer are shown in table 1.

All patients in this group were males. The fact that most of these patients were operated on for long-standing, chronic, intractable ulcers accounts for the high proportion of patients falling within the age brackets of 37 to 50.

The preoperative response to an Ewald test meal was hyperacidity in all cases except those in which there was a functioning gastroenterostomy. Without

Fig. 2.—Characteristic crater of a large jejunal ulcer located opposite the stoma. Although the gastric stump is small, indicating a high resection, the gastric free acidity in this case was 99 units after stimulation with histamine.

exception these patients showed free acid postoperatively when tested with an Ewald meal, and when histamine was used as a stimulant of the partially resected stomach the acid secretion was uniformly high.

Severe or moderately severe pain was a prominent complaint in 9 cases.

The postoperative regimen followed by these patients was quite good in general. In only 2 cases could gross indiscretions in diet be offered as a possible cause of recurrent symptoms. Approximately one half of the patients smoked after their operations. Some of the most severe postoperative ulcers occurred in patients who were well trained and who followed a reasonably careful diet and did not use alcohol or tobacco. In general, these patients did not eat pureéd vegetables except for a few weeks after operation. Their diets were apparently well balanced and contained adequate

vitamins. Severe emotional strain was a definite factor in some cases. Strenuous physical exertion was thought to be important in an occasional case.

In addition to the group of patients in whom definite penetrating ulcer of the jejunum developed after subtotal gastrectomy there is another group who had recurrent gastrointestinal hemorrhages at varying times after operation (table 3). There were 8 cases in this group, and like the verified cases all occurred after operation for duodenal ulcer. The symptoms occurred from a few weeks to three years after operation. In all these cases pain or distress were minimal. The general health and well-being of the patient was usually good, and recovery after the hemorrhage was prompt.

It is interesting to note that the symptoms before operation were similar in general. In 6 of the 8 cases operation was done because of multiple hemorrhages. In all a definite peptic ulcer of the duodenum was found at the time of the resection. Hemorrhagic blood dyscrasia was not noted except in 1 case in which a tentative diagnosis of allergic purpura was made.

Persistent gastric acidity was apparently a factor, since in 6 out of 8 cases free acidity was found postoperatively.

The roentgen examinations after the postoperative hemorrhages gave negative results except for occasional hyperactivity of the jejunum, suggesting irritation.

The morbid condition that accounts for these cases and some of the cases in which there are complaints of recurrent postoperative pain may well be an undemonstrated jejunal ulcer, but there probably exists in most instances a diffuse jejunitis or mucosal irritation with superficial erosions which are traumatic in origin but are aggravated by the persistent peptic activity of the gastric juice. Under favorable conditions healing takes place readily without the development of a crater which can be demonstrated by roentgen rays.

TABLE 3.—*Clinical Features of Eight Cases of Postoperative Hemorrhage in Which Jejunal Ulcer Could Not Be Diagnosed*

Case, Name	Sex, Age	Preoperative Lesion	Preoperative Acidity After Ewald Meal	Operation	Postoperative Regimen	Interval Before Onset	Symptoms	Postoperative Acidity	Roentgen Examination	Treatment	Results
1 Dun.	♂ 42	Duodenal ulcer	Free HCl 88, total 102	Finsterer resection ⅔ of stomach; posterior Polya	Fair diet, moderate smoking	34 mo.	Hemorrhage; no pain	Free HCl 39, total 61	No ulcer demonstrated	Medical ulcer regimen	Relieved
2 Duh.	♂ 32	Duodenal ulcer	Free HCl 77, total 98	Finsterer resection ⅔ of stomach; anterior Hofmeister	Good diet, no smoking	16 mo.	Hemorrhage; epigastric distress at night	Free HCl 15, total 39	No ulcer demonstrated	Medical ulcer regimen	Relieved
3 Pin.	♂ 42	Duodenal ulcer	Free HCl 70, total 84	Finsterer resection ½ of stomach; posterior Polya	Fair diet, moderate smoking, some alcohol	27 mo.	Hemorrhage; epigastric distress	Free HCl 33, total 52	Narrow area in distal loop	Medical ulcer regimen	Relieved
4 Wood.	♂ 31	Duodenal ulcer; gastroenterostomy	Free HCl 39, total 53	Resection 1st portion of duodenum and partial gastrectomy	Good diet	10 mo.	Several hemorrhages; epigastric distress	Free HCl 26, total 35	No ulcer demonstrated	Treated elsewhere	No report
5 Fog.	♂ 31	Duodenal and jejunal ulcer; gastroenterostomy	Free HCl 34, total 64	Resection 1st portion of duodenum and ⅔ of stomach; anterior Hofmeister	Fair diet, moderate smoking	5 mo.	Hemorrhage; no pain	Free HCl 20, total 36	No ulcer demonstrated	Medical ulcer regimen	Relieved
6 Bow.	♂ 33	Duodenal ulcer; gastroenterostomy	Free HCl 58, total 78	Resection 1st portion of duodenum and ⅘ of stomach; anterior Hofmeister	Good diet, no smoking	19 mo.	Several hemorrhages; no pain	Free HCl 0, total 54	No ulcer demonstrated	Medical ulcer regimen	Relieved
7 Ansl.	♂ 48	Duodenal ulcer	Free HCl 31, total 50	Resection 1st portion of duodenum and ¾ of stomach; anterior Hofmeister	Good diet	27 mo.	Hemorrhage; no pain	Free HCl 8, total 24	Not done	Medical ulcer regimen	Relieved
8 McK.	♂ 46	Duodenal ulcer	Free HCl 55, total 74	Resection 1st portion of duodenum and ¾ of stomach; anterior Hofmeister	Good diet, no smoking	22 mo.	Hemorrhage; no pain	Free HCl 0, total 17	No ulcer demonstrated	Medical ulcer regimen	Relieved

DIAGNOSIS

The diagnosis of postoperative jejunal ulcer may be readily suspected when the patient has gastrointestinal bleeding or complains of a recurrence of pain similar to that experienced before operation. Although the diagnosis may be strongly suspected on clinical grounds, it may be extremely difficult to prove. Substantial quantities of free hydrochloric acid after a test meal is circumstantial evidence of an ulcer. Strong evidence is the demonstration of a crater in the wall of the jejunum which occurs usually exactly opposite the stoma, apparently at the point of most prominent impingement of gastric contents as they are forced from the gastric stump (fig. 2). As a rule it is difficult to demonstrate small excoriations or acute nonindurated ulcers, although the jejunum may show signs of excessive spasm in such instances. Jejunal ulcer craters are best visualized by the use of only 1 or 2 teaspoons of a thick, easily spreading preparation of barium sulfate for the examination of the mucosal pattern of the gastric stump, stoma and adjacent loop of jejunum. If more barium sulfate solution is used, the lesion is usually obscured.

Examination should be carried out with the patient in the upright, supine and prone positions, with the use of the fluoroscope and numerous "spot" films. Localized tenderness over the region is suggestive evidence. Areas of narrowing, rigidity, obliteration of normal mucosal folds and "funneling" of the stoma are presumptive evidence of ulceration.

I have had 1 case in which gastroscopic examination visualized an ulcer which was not frankly demonstrated by roentgen rays.

Examination of the stools for occult blood is an important test, and if occult blood is found consistently while the patient is on a meat-free diet it is distinctly good evidence of ulcer.

All patients who complain of severe pain in the abdomen, back or chest postoperatively, regardless of location or apparent dissociation from the digestive tract, should be studied for a penetrating jejunal ulcer.

TREATMENT

The treatment of a postoperative jejunal ulcer is a difficult problem. Patients who do not show a penetrating crater by roentgen examination and some who do can be relieved by a rigid ulcer regimen consisting of bed rest, antacids, a smooth diet, mental relaxation and the elimination of tobacco and alcohol. A diet high in vitamins, particularly vitamin C, in cases presenting a hemorrhagic tendency and one which eliminates the possibility of traumatic excoriation of the jejunal mucosa seems to be a logical measure.

In the cases which present a definite penetrating crater in the jejunum medical treatment has been disappointing. Temporary relief has been obtained while the patient is at rest, but there is a tendency for pain to recur, with a resumption of physical activity.

Surgical excision of the perforating type of jejunal ulcer usually has been necessary for relief.

COMMENT

It is apparent that subtotal resection of the stomach and duodenum is not the final answer to the problem of duodenal ulcer in some cases. On the other hand, the results in gastric ulcer are gratifying with respect to permanent cure as well as to the elimination of a possible malignant condition.

The dictum "no acid, no ulcer" still holds, but it would seem that the anacidity after the resection of the lower three fourths of the stomach is more apparent than real, and in many cases there are probably times when the jejunal mucosa is subjected to gastric juice high in acid and pepsin.

Although the incidence of recurrent ulcer after radical resection of the stomach is lower than after gastroenterostomy, the postoperative ulcer problem is still unsolved. The type of case appears to be as important as the selection of operation, since it is noted that the group of cases in which a jejunal ulcer develops after gastroenterostomy also shows the highest incidences of postoperative ulcer when the patient is subjected to subtotal gastrectomy.

The evidence at hand seems to indicate that any procedure that does not remove the pylorus and the duodenal ulcer is inadequate.

For the present, at least, subtotal resection will remain the operation of choice for many ulcer cases which require surgery. However, in cases in which there is a high postoperative acid secretion, and particularly when there is a history of previous gastroenterostomy and jejunal ulcer, protective measures should be instituted postoperatively and maintained indefinitely.

As they stand, these figures constitute a challenge and an indication for the need of further advance in the surgical treatment of duodenal ulcer.

605 Commonwealth Avenue.

ABSTRACT OF QUESTION PERIOD

What is the optimum amount and frequency of feeding of cream for an ulcer patient?

DR. HARRY SHAY, Philadelphia: The optimum amount is difficult to state for any one individual. I can answer that question best by stating that certainly milk has been found to be, from the standpoint of the neutralizing effect, as efficacious as any other of the substances or any drug suggested. It has been shown, for example, that milk can combine with its own volume of 0.3 per cent hydrochloric acid. The optimum amount is the amount that we usually use for these patients, varying of course from the beginning when feedings are given from 2 ounces of cream an hour, to lesser amounts as other foods are added to the diet.

Can you correlate the various psychosomatic factors in ulcer with your concept of gastric secretion?

DR. MAURICE FELDMAN, Baltimore: We could correlate the psychosomatic pattern in this respect, that the average case of ulcer occurs in young adults, who are jittery, high strung and emotional, and unable to adjust themselves. We feel that they are more susceptible to duodenal ulcer than the average group of cases. We feel that this group of cases, if properly eliminated by the gastroenterologists in the Army, will lower the incidence of complications occurring.

What is the duration of one course of treatment by the drip method?

DR. ASHER WINKELSTEIN, New York: In the moderately severe cases three meals a day are given and the drips between the meals during the night for three weeks, or preferably four weeks, and thereafter the night drip is continued for another six weeks, preferably.

Why do you think the continuous drip therapy is more effective than the administration of medicaments by mouth during a period of twenty-four hours?

DR. WINKELSTEIN: The superiority of the milk drip is due to the fact that waking the patient during the night disturbs him, acts as a stimulant to acid secretion and cannot be continued indefinitely. It has been found by Dr. Kirsner and Dr. Palmer that a large dose of aluminum hydroxide given every two hours during the night does not give a p_H of more than 3, whereas with milk drip and aluminum gel drips we get 3.4 without peptic activity. It is impossible in our experience to control the intradigestive secretion in the daytime or during the night with any other form of therapy.

With the high incidence of ulcer and militarily limited practice, how are you going to carry on?

DR. WINKELSTEIN: We believe that is one of the great advantages of the milk form of therapy, for in private practice and even in hospital and outpatient practice we are able to teach the patients to carry out this therapy by themselves at home. I am destroying a fair percentage of my own personal practice by teaching the patients how to treat themselves instead of my treating them.

How often does alkalosis occur with soda in the Winkelstein drip?

DR. WINKELSTEIN: In the early stage we studied the carbon dioxide combining power of venous blood and did not find in any instance over 60 volumes per cent. We have stated that milk soda is not preferable with alkaloses, advanced renal disease, and older conditions, as emphasized by Dr. Jordan. We believe that in those cases the nonabsorbable alumina gel drips are preferable. [Dr. Winkelstein showed slides, the first of which illustrated the hypersecretion and hyperchlorhydria throughout the night in duodenal ulcer patients while on the Sippy therapy during the day. This high acidity during the night has been confirmed by Henning in Europe, Val Dez in Chicago and Dr. Sandweiss, who is about to publish a careful study on the same thing. The second slide was a statistical summary of 34 cases showing that the average p_H of 1.5, which is about 60 clinical units, is produced by all three forms of

drip therapy, bicarbonate, the aluminum hydroxide and aluminum phosphate, in which there could be no acid irritation or peptic activity. The third slide showed the same thing in individual cases, three curves, the duodenal ulcer with pronounced reduction of acidity with a drip after breakfast and during the night. The fourth slide showed a high curve of secretion, from 6-50 to over 60 throughout the night, with decided hypersecretion while the patients were on Sippy therapy during the day.]

Can you give a physiologic explanation for hypersecretion in ulcer?

DR. J. EARL THOMAS, Philadelphia: It has been suggested by Dr. Ivy that the irritated intestinal mucosa associated with the duodenitis may give rise to production of histamine which is absorbed in the blood stream and therefore causes increased secretion.

If acid is important as a factor, should not acidity in the intestine rather than the stomach be controlled in duodenal ulcer?

DR. THOMAS: Definitely. Recent work done in our laboratory by Dr. Berk has emphasized that point, and the results will be published in due time.

Please explain the occurrence of duodenal ulcer and perforation after extensive burns in patients with normal stomachs.

DR. THOMAS: That interesting question calls for a lot of speculation, but it has been shown that the continuous absorption of histamine, when large doses are injected subcutaneously in oil, will cause perforating duodenal ulcer in experimental animals. The view is prevalent that burns give rise to the absorption of histamine-like substances in the blood and that the burn shock which follows is the result of such absorption. Putting those facts together, it isn't difficult to imagine that an absorption through a burned area causes the continued action which is responsible for this.

How many achlorhydrias have you seen produced by surgical procedure?

DR. REYNOLD E. CHURCH, New York: The only answer to that is in follow-up results on subtotal resections done by routine method with no special technic carried out. We had 46 per cent of the cases without free hydrochloric acid, and there was an average follow-up of 2.88 years.

What good is it to sever the vagal fibers to the stomach in surgical procedures for ulcer, when the cephalic, gastric and intestinal stimulating factors remain?

DR. WINKELSTEIN: Years ago Dr. Eugene Klein and I suggested to Dr. A. A. Bergh that the postoperative acidity after partial gastrectomy was due to persistence of nervous phases of gastric secretion, which we thought we demonstrated in clinical studies. At our request Dr. Bergh severed the anterior vagal fiber subphrenically over the cardia in about 40 patients. Thirty-six out of 40 patients developed postoperative achlorhydria, more than half immediately and some later. None of these developed a postoperative recurrent ulcer and none suffered any harmful results from the procedure. We advocate that surgeons operate on duodenal ulcer with high free acidity and, in addition to partial or subtotal gastrectomy, that they should not cut the vagal fibers but only the subanterior ones which may lead to harmful procedures in the abdomen.

How long after the subtotal gastrectomy did the jejunal ulcer develop?

DR. EVERETT D. KIEFER, Boston: In all but 2 cases they developed within a year after operation. The earliest one was within one month. Most of them were within one to nine months. In cases of simple hemorrhage, however, that were not diagnosed as ulcer, the hemorrhage seemed to occur at any time up to three and four years after operation.

What are the minimum indications for operation for a bleeding peptic ulcer?

DR. KIEFER: I take this to be in the presence of acute hemorrhage. The patient should be over 45 years of age and more particularly if, under medical management, he shows signs of continued or repeated hemorrhage, he should be operated on at once. That is the important criterion, in my opinion, that he repeats his hemorrhage or continues his hemorrhage in spite of everything else we do.

Are we able to control bleeding by the drip method? What is your experience?

DR. V. C. ROWLAND, Cleveland: Hemorrhage has not been regarded as contraindicating that in my experience. We believe in the use of the aluminum hydroxide drip. By suspending digestion the common experience is that bleeding does not recur.

Would you emphasize the need for diagnosis of cause of obstruction, whether prepyloric, postpyloric or lesser curvature ulcer?

DR. ROWLAND: The diagnosis of obstruction is not as easy as might appear; in fact, many obstructions are unrecognized. The x-ray examination may be misleading and denote vomitus and obstructive factors causing distention and pain and so-called intractability.

If you believe in the conservative treatment of bleeding peptic ulcer, would you care to say how soon the operation was done? What influence has the time factor between onset of hemorrhage and operation?

DR. JOHN M. BLACKFORD, Seattle: I purposely have not gone into any discussion in my paper with regard to the time for operation. We have a definite feeling that the operation should be undertaken only on patients past 45 with serious hemorrhage and that operation should be undertaken as promptly as possible if it is to be undertaken, because patients operated on after six, seven or eight days give a bad prognosis.

What has been your personal result of the operation on elderly people?

DR. BLACKFORD: I feel that two or three lives have been saved by operation. My experience is very limited.

Are you planning on it as a regular procedure?

DR. BLACKFORD: I feel that in the serious cases it must be seriously considered and I usually do it.

What about your experience of medical treatment of acute perforated ulcer?

DR. BLACKFORD: A local surgeon, Dr. Bernard Mullen, became interested in a report of Dr. Wangensteen, published in 1925, in which he treated by aspiration 8 cases of acute perforated peptic ulcer. Dr. Mullen undertook some of this work at our county hospital; some of his friends also became interested, and to date they have treated 28 patients with acute perforations, 6 or 8 of whom had free gas, shown by examination, in the abdomen. They have been treated by putting down a Levine tube and giving a patient occasional small sips of very dilute sodium bicarbonate solution. Only three deaths occurred. Dr. Mullen feels that this is such a touchy subject that he has not published a report of his work; however, he feels that this might have a great deal of importance in military surgery because there will be many instances of acute perforation in the armed services, in which this apparently might be a life saving procedure.

Don't you think that an end to side posterior Polya type operation will reduce the incidence of gastrojejunal ulcer?

DR. KIEFER: There are not enough figures to give any percentage of comparison, but this did occur in 1 or 2 instances in this group. Apparently it is not a safeguard or anything that will prevent jejunal ulcer.

In fatal cases over age 45 have you any figures on how many were due to hemorrhage per se and how many were attended by complicating diseases which were factors in the fatality?

DR. JACOB MEYER, Chicago: I do not have such figures; however, this may be stated: At first I do not think that, given a proper elevation and other conditions, arteriosclerosis or even coronary sclerosis is a contraindication to operation in the aged.

What was the cause of death after operation for bleeding peptic ulcer?

Dr. Meyer: Various causes were encountered, varying from bronchial pneumonia in the young patients to peritonitis in others.

Do you think the mortality rate of 28 per cent in patients over 45 with just hemorrhage would be improved if surgery should be done immediately in every case?

Dr. Meyer: That is a hard question to answer. It is likely that in one's early experiences the mortality may be increased unless one makes a very proper selection of cases.

What are your criteria for distinguishing duodenitis from duodenal ulcer?

Dr. B. R. Kirklin, Rochester, Minn.: Duodenitis without ulceration is a comparatively rare finding. We feel that, in a duodenum with pronounced irritability, transient deformity due to spasm at one moment may be some deformity of the duodenal bulb at the next moment, a different type of deformity or none at all. Smooth contour and hyperirritability are the principal signs, x-ray signs, that we use in establishing the diagnosis of simple duodenitis without ulcer.

Have you any method of identifying the prepyloric ulcer in the presence of severe pylorospasm?

Dr. Kirklin: Prepyloric spasm is the one thing that indicates the accurate identification of the prepyloric lesion more than any other one finding. Because of the prepyloric spasm common with almost all ulcers, especially those near the pylorus, it makes the identification of these that much simpler. Of course, one has to be satisfied with merely reporting that there is a lesion at the outer edge of the stomach or obstructing lesion or ulcerating lesion; unless one is certain that one is dealing with a peptic ulcer niche, one should not report it as a simple ulcer.

What are your criteria for the roentgenologic diagnosis of carcinomatous ulcer, and how do you differentiate this from "benign hyperplasia"?

Dr. Kirklin: We can't always do it—at least I can't. Some of the roentgenologic features that help differentiate benignancy from malignancy in a gastric ulcer are as follows: 1. In almost all benign gastric ulcers there is a pronounced gastrospasm, usually prepyloric, regardless of where the ulcer may be in the stomach. With small ulcers there is usually not much spasm. 2. The contour of the ulcer niche in a simple ulcer is almost always smooth, hemispherical. The density of the niche is usually the same as that of the barium filled lumen of the stomach, while in malignant ulcers the contour may be irregular, ill defined and the density of the niche not the same, that is, less than that of the barium filled lumen. 3. One of the most important factors in the differential signs that the roentgenologist can enlist is not purely roentgenologic but clinical and that is the question of tenderness. I think that practically all peptic ulcers in our experience, benign peptic ulcers, are definitely tender to direct palpation, which we can do under fluoroscopic manipulation. On the other hand, most malignant ulcers are not tender to the erectile patient. Those are the x-ray findings that help us identify some of the ulcers that are malignant—and don't misunderstand me, because there are many ulcers that have no roentgenologic signs as far as I am concerned, that appear—they have nothing to indicate a malignant condition, yet from 10 to 12 per cent turn out to be malignant at pathologic examination.

Regardless of size, clinical picture and laboratory procedures, would you operate shortly after this diagnosis is made or would you delay for a therapeutic test of response to treatment?

Dr. Kiefer: I would try a reasonably short period of medical treatment and watch the response. I believe that a period of two or three weeks is not too long to observe these patients. The ulcers all should disappear entirely in this time.

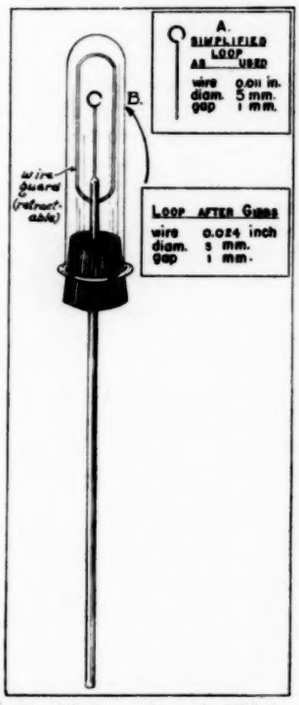
Clinical Notes, Suggestions and New Instruments

A NEW PRESUMPTIVE TEST FOR PROTHROMBIN DETERMINATION

Alex W. Ulin, M.D., and Emil Barrows, M.D.
Cincinnati

We wish to present a new presumptive test for determining the prothrombin level in whole blood.

This method utilizes a drop of blood obtained simply by finger prick. Too often on desperately sick patients whose veins have been obliterated by frequent previous venipuncture clinicians have been loath to do prothrombin determinations as frequently as indicated, or indeed they have been frustrated in this particular because of their inability to withdraw an adequate sample of blood. With infants and young children venipuncture is often a major difficulty. Thus a method which obviates venipuncture is desirable. Consequently we have elaborated a method which applies Gibbs's clinical blood coagulometer.[1]



Simplified version of Gibbs's loop and the loop after Gibbs.

In 1924 Gibbs described a new type of clinical blood coagulometer which was simple and accurate. He referred to other types of coagulometers and described the principles involved. Briefly, a drop of blood, freshly drawn by stab puncture, will move freely on a clean wire; when the coagulation point is reached, the movement of the drop ceases abruptly, and this is a clearcut end point. By applying our knowledge of thromboplastin and determination of prothrombin, we were able to adopt the coagulometer as a presumptive method of determining prothrombin. In other words, we developed a standard technic for adding thromboplastin to the test drop of blood so that with an excess of thromboplastin we were in effect testing the prothrombin content of the blood.

APPARATUS AND MATERIAL USED

1. The loop coagulometer: A simplified version of Gibbs's coagulometer, whose effective part is merely a thin platinum wire loop 5 mm. in diameter with a 1 mm. defect, is shown in the illustration. The loop is mounted on an aluminum handle protected by a guard and set in a glass tube from which it is easily removable. The platinum wire used is 0.011 inch in diameter. In the Gibbs coagulometer the defect in the circumference of the loop is placed well away from the junction of the stem and the loop. Such a loop, more difficult to construct, would be more efficient in use. We are now using such a loop (*B*) with a wire 0.024 inch in diameter.

Because of the ease of its construction, we had a platinum wire fashioned into a loop (*A*) so that the gap was located between the end of wire and stem junction. However, the principle of operation remains the same; that is, when such a loop is drawn through a drop of blood so that the gap is last to leave the drop, the film of blood that naturally forms in the loop is disrupted and a globule forms on the wire. It

From the Department of Surgery, University of Cincinnati College of Medicine and the Cincinnati General Hospital.

Mr. Joe Thuerig in the Surgical Instrument Department of the hospital gave technical assistance. The William S. Merrell Company, Cincinnati, also assisted in the work.

1. Gibbs, Owens S.: A Clinical Blood Coagulometer, Quart. J. Med. **17**: 312 (April) 1924.

is important to have the loop perfectly formed, smooth and absolutely clean.

2. Thromboplastin: This is extracted from dried rabbit brain according to the method of Quick. There is one exception, however, on which we shall report at another time and that is that the activity of the thromboplastic substance can be maintained for a much longer period of time if the supernatant fluid containing the extract is not separated from the residue. We keep the extract in the same tube in which we kept the extraction at about 4 C. A cotton plug is placed in the tube and tamped down gently in order to separate filtrate from residue.

3. Thromboplastin dispenser: Any dropper with a tapered delivery tube that will dispense a medium size drop.

4. Bard-Parker blade No. 11 to make a clean deep stab puncture.

5. Alcohol lamp to clean the platinum loop. After heating to red heat the platinum wire cools promptly and is ready for use.

6. Stopwatch.

METHOD OF PROCEDURE

1. Cleansing: The finger is cleansed with alcohol and dried thoroughly. Absolute dryness of the finger is essential because any remnant of a volatile cleansing substance will delay coagulation. The use of gauze to dry the finger is recommended. It is necessary to avoid cotton and other materials that leave particles of lint.

2. Stab puncture: We have used fingers of adults and toes or heels of infants. The cut should be clean and deep and blood should flow readily with very slight pressure. Squeezing or milking the digit will accelerate coagulation.

3. Application of thromboplastin: Subsequent to the stab puncture and the appearance of blood, the wound is gently wiped dry and a drop of thromboplastic substance is placed directly on the puncture wound. A medium size drop about 0.04 cc. is best.

4. Test drop: With slight pressure a drop of blood will well up from the wound into the drop of thromboplastin. The mixture of the two drops is completed by the loop and simultaneously the stopwatch is started, i. e. the active mixture of blood and thromboplastin is the beginning of our measured prothrombin time interval.

5. Loop globule: The loop is pushed through the mixture so that the gap is the last part to leave. A single globule will form on the loop. Occasionally several small beads of blood will form. These can be converted into a single globule by gently tapping and rotating the instrument. Of prime importance is the size of the loop globule; its dimensions must be such that its form is symmetrical. A large distorted globule will prolong coagulation. When the proper globule is formed, the loop is placed in the protective tube.

6. For about ten seconds we do not rotate the instrument, so that we disturb as little as possible the physical factors involved.

7. End point: The instrument is gently rotated and the test globule moves readily on the wire. The end point is indicated by cessation of this movement.

8. Calculation: The coagulation time is recorded in seconds. The presumptive prothrombin level, expressed in percentage, is determined by comparison with the coagulation time of a normal control.

$$\%\ \text{prothrombin of patient} = \frac{\text{Clotting time of normal}}{\text{Clotting time of patient}} \times 100$$

RESULTS

1. By using the presumptive loop method, the prothrombin time for control patients varied from day to day between seventeen and twenty-one seconds. Diluting the thromboplastin did not give as consistent results as the straight extract.

2. In patients with abnormal prothrombin, our method checked with results obtained by the Smith "bedside" test.[2]

3. The coagulation time is shortened by squeezing the digit, when the wound is not clean cut, and with consecutive drops.

COMMENT

In checking the accuracy of the loop test, we judged by our ability to duplicate results on the same patient using different stab wounds. Often, if the blood flows freely, the same wound can be used for a check determination. However, ordinarily the first drop gives the most prolonged coagulation time and represents the truest value. Apparently the thromboplastic substance present in the tissue juices affects the coagulation time even in the first drop, in spite of the most careful technic to avoid it.

Certain technical difficulties are easily overcome by practice; thus the uniformity of the stab wound, the size of the drop of blood and the formation of an even globule on the loop. We as yet have not correlated the effect of hematocrit and specific gravity of the blood with results of the loop test. It seems reasonable to believe that these factors have some effect on the end point. Still, by dilution with the thromboplastic extract, the influences of these factors are diminished. However, in spite of the variables, we have found that the test is accurate. It is a presumptive test and so its accuracy is clinically acceptable if the technic is careful, uniform and standard.

SUMMARY

The new presumptive test described here which utilizes a drop of blood for prothrombin determination is rapid and clinically accurate and can be done at the bedside.

2. Ziffren, S. E.; Owen, C. A.; Hoffman, G. R., and Smith, H. P.: Control of Vitamin K Therapy: Compensatory Mechanism at Low Prothrombin Levels, Proc. Soc. Exper. Biol. & Med. **40:** 595 (April) 1939, cited by Smith, H. P.; Ziffren, S. E.; Owen, C. A., and Hoffman, G. R.: Clinical and Experimental Studies on Vitamin K, J. A. M. A. **113:** 383 (July 29) 1939.

PENILE ULCER CAUSED BY ENDAMEBA HISTOLYTICA

MAJOR HAROLD B. HERMANN, M. C., U. S. ARMY, AND
FIRST LIEUTENANT LEONARD S. BERMAN, M. C., U. S. ARMY

Preclinical and clinical studies of Endameba histolytica infection are well known to the medical profession and have served materially in its proper prophylaxis and therapeutic control. While the pathology of this clinical entity has received considerable attention, infection of the penis by the Endameba histolytica organism is practically unknown. The case reported here is unusual not only because of its rarity but because of the difficulties in diagnosis and prompt response to specific therapy. Only 1 case of a similar nature has been reported in the literature. Amebiasis occurs quite commonly in the southern United States. Our patient was a native of Florida. Infection takes place essentially by way of the mouth. The active vegetative endamebas live in the tissues of the intestinal wall, where they ingest blood corpuscles and multiply by division. In the primary amebic lesions the amebas make their way into the follicles of the large intestine, where they multiply and thrive. Partly by pressure and partly by the secretion of a cystolysin they make their way into the interglandular tissue and produce a small amebic abscess of the submucosa. In time this abscess ruptures and becomes an ulcer. A certain proportion of amebas leave the ulcers they produce, enter the bowel, encyst, and pass out in the feces. Occasionally, however, the vegetative amebas may migrate from their site of election in the bowel wall and, as tissue invading organisms, enter the venous system and are transported to the liver and occasionally to the spleen, brain or lung. In this process they become unable to complete their cycle of development observed outside the body. Precystic and cystic stages are not known to develop in this region; however, great quantities of cysts were seen in the exudate from the penile ulcer in the case presented.

From the Section of Urology, Tilton General Hospital, Fort Dix, New Jersey.

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

REPORT OF CASE

W. H., a white soldier aged 25, admitted to the Station Hospital, Mitchel Field, Aug. 30, 1941, had noticed a "white spot" on the under surface of the glans penis near the coronal sulcus, August 25, the spot appearing seven days after sexual exposure. The ulcer was not painful at first but gradually enlarged until it was almost a centimeter in diameter. At the Station Hospital Hemophilus ducreyi was isolated from the lesion, but dark field examination and the Wassermann reaction were negative. In spite of sulfathiazole therapy locally and orally, the lesion became larger and very painful. After six weeks the patient was transferred to the Tilton General Hospital.

On admission to this hospital the patient complained bitterly of penile pain. He also states that he had occasional episodes of diarrhea and stated that he had amebic dysentery two years before. Examination revealed a ragged ulceration of the entire glans penis. The ulcer had red undermined, edematous edges and was covered with a glairy gray sticky exudate which was very tenacious and was wiped away with difficulty. Repeated bacteriologic studies of the lesion were negative for H. ducreyi and Treponema pallidum. Only secondary contaminants were found.

The Wassermann and Kahn reactions, however, were positive at this time. Studies of the stools were persistently negative for endamebas. Following a biopsy obtained through a dorsal penile slit, sulfathiazole therapy was started both locally and by mouth. Intensive antisyphilitic treatment was also instituted.

During the subsequent four months, the patient's condition showed intermittent improvement. The ulcer would heal to the point of being replaced by clean granulation tissue but would then regress with the reappearance of the characteristic glairy tenacious exudate. Carcinoma was considered, but biopsy sections revealed nonspecific inflammatory tissue. Pain persisted which at times required morphine. In an attempt to divert the urinary stream as an aid to healing of the penile lesion, a suprapubic cystotomy was performed. Following this procedure, improvement took place but this was of only a transient nature.

On Feb. 2, 1942 a specimen of stool was found to contain Endameba histolytica. A regimen of emetine hydrochloride and carbarsone was instituted. During the next eight days the ulceration began to extend down the sides of the shaft. Amputation was tentatively considered, when it was deemed advisable to look for amebas in the exudate from the penile ulcer. The exudate contained myriads of cystic forms of amebas, which were grown in pure culture.

As carbarsone is the amebacide most readily soluble, it was applied locally as a 0.5 per cent solution. In twenty-four hours all pain had disappeared. At the end of seventy-two hours there was little exudate and small points of fresh granulation tissue appeared. From then on the patient's course was one of rapid healing with complete epithelization taking place.

COMMENT

Amebiasis of the penis is a very rare condition. A survey of the literature with the help of the staff of the Surgeon General's Library revealed only the case of Shih, Wu and Lieu.[1] In that case there were no intestinal symptoms, the stools were negative for amebas and the penile ulcer healed rapidly with emetine given in the usual manner. It is interesting to note that the lesion in our case was spreading rapidly while emetine and carbarsone were being administered for the intestinal infection but responded quickly to the local application of carbarsone as a continuous wet dressing. We believe that the penile infection was secondary to the intestinal infection and that poor personal hygiene resulted in intermittent autoinoculation.

CONCLUSION

Amebiasis of the penis must be kept in mind in the case of any chronic, indolent phagedenic ulcer of the penis which does not respond in the usual period of time to the accepted local and oral therapy.

1. Shih, H. E.; Wu, Y. K., and Lieu, V. T.: Amebiasis of the Penis, Chinese M. J. **55**: 139 (Feb.) 1939.

Special Articles

RECOMMENDATIONS TO STATE AND LOCAL HEALTH DEPARTMENTS

FOR A VENEREAL DISEASE CONTROL PROGRAM IN INDUSTRY

ADVISORY COMMITTEE ON THE CONTROL OF VENEREAL DISEASES

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Because it is axiomatic that the venereal diseases must be attacked wherever they exist, the provision of adequate control measures for these diseases in industry is important. Thus far, however, only scattered attempts at establishing such control have been made. Present control activities are restricted largely to a general program. They do not aim at specific population groups. Industry represents a great number of special population groups—a total labor force of fifty-three million men and women, 14 years of age or older, in communities throughout the country.

A venereal disease control program carried directly to the public will provide for a large percentage of workers. But it will not reach them all, nor is there assurance that patients will remain under treatment. If, however, the general program is implemented by control measures in industry, two benefits will accrue: The total number of patients brought under treatment will be increased and the treatment will be more effective because the employers may properly require that employees remain under treatment until "cured" as a condition of continued employment.

In its broadest outlines, a venereal disease control program in industry involves cooperation between four groups: the employer, the employee, the medical profession and the state and/or local health departments. The employer is interested in the health and well-being of his employees, the employee in the efficient performance of his job, the medical profession in furnishing diagnostic and treatment facilities for those workers who require medical care, and the public health department in providing certain fundamental facilities which have been developed for the general venereal disease control program and which may be employed to advantage in the program in industry.

Venereal diseases are costly to the employer. The extent of these costs are unknown, but there is sufficient evidence to indicate that they are sizable enough to justify vigorous action. From the standpoint of the employer's liability, sickness and injuries chargeable to

Report of the Advisory Committee on the Control of Venereal Diseases in Industry to the United States Public Health Service, Aug. 10, 1942

the venereal diseases contribute their proportionate share to the loss of time in production as well as the loss of money through compensation payments.

Venereal diseases are no less costly to the worker. He lives by his skill, and he is paid for the time he spends applying that skill. Untreated venereal disease keeps him away from work, impairs his skill, shortens his life. It is in his interests to avail himself of the advantages of venereal disease control measures.

Workers in many plants are provided with a full or part time medical service. The addition of venereal disease control measures would be a logical extention of the medical program. Syphilis and gonorrhea are two diseases for which medical science has developed satisfactory diagnostic, therapeutic and control procedures.

The health of the American worker has assumed a new public significance. Five years ago industrial health was the concern of health departments in seventeen states, whereas today more than three fourths of the states are engaged in rendering health services to industry. Never before has the importance of activities for maintaining the physical fitness of the worker so closely paralleled the importance of production itself.

Policies regarding the employment of persons infected with venereal disease differ widely. In some instances in which blood testing has uncovered a number of venereal infections, short sighted employment policies have discriminated against the infected persons to the extent that they were unable to find or hold employment. On the other hand, a number of organizations employ infected persons under provisions that have proved satisfactory to employer and employee alike.

In order to assemble current authoritative information and to formulate basic principles applicable to a program of venereal disease control in industry, the Surgeon General has appointed an Advisory Committee to the United States Public Health Service.

OBJECTIVES OF VENEREAL DISEASE CONTROL PROGRAM IN INDUSTRY

A. MEDICAL AND PUBLIC HEALTH:

1. To find and refer for proper medical management all cases of venereal diseases among workers in industry.

(*a*) To prevent the spread of venereal diseases through early and adequate treatment.

(*b*) To prevent the development of late disabling manifestations by arresting progress of the disease through adequate treatment.

(*c*) To bring contacts of infectious persons under medical observation.

2. To establish equitable policies for the employment of applicants and continuation of services of employees who have venereal diseases.

(*a*) To assure adequate treatment by requiring that employment be made dependent on the presentation of satisfactory evidence by the employee that he is under proper medical management.

3. To coordinate the community and industrial venereal disease control programs.

B. EMPLOYEE:

1. To improve the physical condition of employees.

2. To reduce the number of workdays lost through illness or injury.

3. To provide job placement in order that the services of individuals having syphilis or gonorrhea may be employed at work which they are physically capable of performing with profit to themselves and to their employer, and without risk to themselves, to fellow workers or to the public.

4. To prolong and increase the earning power of employees by increasing life expectancy.

C. EMPLOYER:

1. To reduce compensation costs.

2. To lessen work interruptions and labor turnover.

3. To enhance production by increasing the efficiency of workers.

4. To minimize those personnel problems which arise from syphilis and gonorrhea as causes of ill health and nervous instability.

PRINCIPLES AND METHODS TO BE EMPLOYED

Methods to be employed in carrying out a program of venereal disease control among industrial workers will vary according to the local situation. Consideration must be given to the facilities and services available from state and local health departments as well as to the size and number of industries in the area concerned.

In formulating a venereal disease control program for industry, the committee recommends that certain agencies be consulted in order to assure agreement on all phases of fundamental policy. In order to effect such an understanding, officers charged with the responsibility of this program in state health departments are urged to discuss their plans with the following statewide agencies: (1) the state labor department, industrial commission or similar department of state government, (2) the industrial health, venereal disease or other appropriate committees of the state medical society, (3) the associations representing employers, (4) the labor organizations and (5) the appropriate voluntary health and welfare associations. These agencies constitute a lever for action as well as channels through which information can be distributed to a large and responsible section of the population.

An advisory committee to state health departments composed of representatives selected from the aforementioned agencies should be organized. Such a committee could render invaluable assistance and would give continuity to the statewide program.

ADMINISTRATION OF THE PROGRAM

Responsibility for the administration of the program should be shared by the industrial hygiene and venereal disease divisions of the state health department.

The industrial hygiene division of the state health department is familiar with the type and location of industries in the state, the number of persons employed and the relationship of labor organizations. The venereal disease division is familiar with the basic considerations in the general venereal disease control program that will be required for a program in industry. The industrial hygiene division should assume an active role in the preliminary phase of the program. Subsequently this division can render valuable assistance in persuading plants to adopt suitable control measures. This may be accomplished as a part of the division's regular activities concerned with special studies, surveys and other contacts with industry.

A consultation service to industry should be furnished by the venereal disease division, providing detailed information necessary for the inauguration of programs in plants. This consultation service should include recommendations for specific control measures, diagnostic laboratory procedures, treatment facilities, educational material, epidemiologic and case holding services and free drug service.

EDUCATIONAL PROGRAM

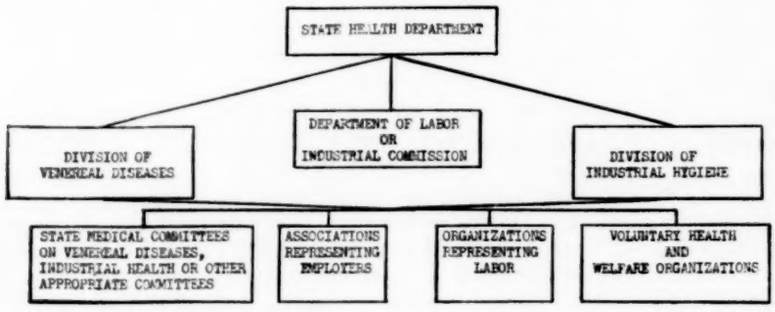
A venereal disease control program should not be inaugurated by an industry without a complete educational program. The homogenicity of the plant population will contribute to the success of an educational program, and many industries are equipped to undertake this responsibility with the assistance of state or local health departments.

The employee should be convinced that adequate treatment protects both his health and his ability to earn a living. He should be given a satisfactory general understanding of the venereal diseases, their cause, spread and cure. It is most appropriate that information about prophylaxis be included.

Employers should understand that not all cases of venereal disease are infectious and, further, that under proper treatment infected persons may be employed safely and profitably.

The only way in which both employer and employee can acquire such an understanding is through an educational program. It is best that this understanding be acquired prior to the introduction of venereal disease control measures.

It is important that the educational program be presented in an effective manner. The several mediums that are available should be carefully selected in accordance with their suitability under varying circumstances. These mediums include posters, folders, pamphlets, articles published in management and employee magazines and, in addition, the presentation of the subject by speakers and motion pictures. Pamphlets and folders for distribution may be kept in wall racks located in places frequented by workers; they may also be distributed after lectures and motion picture showings. Posters may be displayed effectively on bulletin boards placed in plants, union meeting rooms and other locations where employee assemblages are held.


STATE HEALTH DEPARTMENT
DIVISION OF VENEREAL DISEASES
DEPARTMENT OF LABOR OR INDUSTRIAL COMMISSION
DIVISION OF INDUSTRIAL HYGIENE
STATE MEDICAL COMMITTEES ON VENEREAL DISEASES, INDUSTRIAL HEALTH OR OTHER APPROPRIATE COMMITTEES
ASSOCIATIONS REPRESENTING EMPLOYERS
ORGANIZATIONS REPRESENTING LABOR
VOLUNTARY HEALTH AND WELFARE ORGANIZATIONS

Introductory phase in the development of a venereal disease control program in industry.

The education of a relatively small group in a plant population, such as foremen and shop stewards, has been found successful in disseminating information to the total employee population. Most health departments have available motion picture films, literature, posters and so on and are familiar with technics that can be of material assistance to industry in conducting an educational program.

EXAMINATION

Health supervision of workers should include a careful history, physical examination, such special examinations as may be indicated, and laboratory tests. Included in the latter should be a serodiagnostic test for syphilis and, when indicated, a smear or culture for gonorrhea. In order that the venereal disease control program may be effective, preemployment examinations should be mandatory for all workers.

Many industries provide periodic physical examinations for their employees. The interval at which these examinations are performed will in many instances be dictated by the type of work involved. Some industries reexamine employees who are absent because of temporary layoff or illness. Laboratory tests for syphilis and gonorrhea should be made a part of the periodic, reemployment or "return from illness" physical examinations. When the interval between examinations is less than three months and no indication of infection exists, the tests need not be repeated. Under no circumstances should the interval between examinations be more than three years.

EXAMINATION RESULTS CONFIDENTIAL

The laws of most states protect the confidential nature of venereal disease information as regards the individual. It is of utmost importance that the results of the medical examination be considered confidential between the worker and the medical staff. This provision, of course, does not exclude the physician to whom the worker is referred for treatment or the health authorities in states where reporting of venereal disease is legally required. Information should be furnished to others only on the consent of the individual concerned or, failing this, on legal advice.

The industrial medical staff has a responsibility to fulfil in safeguarding the interests of the industrial organization and the fellow workers of persons found to have a venereal disease. In fulfilling this responsibility they should make proper recommendations to the management as to the physical fitness of the employee for work. For appropriate action, such recommendations do not require detailed medical information.

When routine practice permits the usual clinical record to be kept in an open file available to nonmedical personnel, separate venereal disease forms should be employed and filed in the medical department for the use of the medical staff only.

EMPLOYMENT POLICY

Many employers have thought that all persons with a venereal disease were infectious and should be denied employment or be discharged. When this policy is followed without due regard to what may be achieved through adequate treatment and careful case selection to eliminate those with serious disabling manifestations, the right to earn an income is unjustifiably denied.

There is no reason for denying employment to an applicant or for discharging an employee because an examination has revealed evidence of syphilis or gonorrhea, provided:

1. That the employee agree to place himself under competent medical management.

2. That, if the stage of the disease is infectious, employment should be delayed or interrupted until such time as a noninfectious state is established through treatment and open lesions are healed.[1]

3. That syphilis exists in a latent stage.

1. The Subcommittee on Industrial Health and Medicine of the Health and Medical Committee of the Office of Defense Health and Welfare Services has established the following policy for determining employability of workers with clinical or serologic evidence of syphilis: "They should be free from infectious and contagious lesions, free from hazard to themselves and other persons, and should be required to show satisfactory evidence that they are continuing under competent antisyphilitic treatment regularly."

4. That, when disabling manifestations exist which would render such individuals industrial hazards to themselves, other employees or the public, employment may be deferred or denied.

5. That provision be made, whenever possible, for occupational readjustments of employees who develop disabling manifestations that do not incapacitate them from performing some type of useful work.

6. That workers with syphilis in any of its stages, and regardless of past or present treatment status, should be excluded from areas of toxic exposure, and that those having cardiovascular syphilis or neurosyphilis should not be exposed to such physiologic stresses as extremes of temperature, strenuous physical exertion or abnormal atmospheric pressure.

7. That workers with gonorrhea should be allowed to work only under special medical observation during the administration of sulfonamide drugs.

CONFERENCE FOR PERSONS WHO HAVE EVIDENCE OF A VENEREAL DISEASE

The applicant or the employee whose examination reveals evidence of a venereal disease should be called to the industrial physician's office for a conference.

The worker whose infection is found to be communicable should be referred to his family physician or to a public clinic (for those who are unable to pay for private medical care) for confirmation of diagnosis and such treatment as may be indicated.

An applicant found to have a communicable venereal disease should be advised that he cannot be considered for employment until he has received the amount of treatment required to render him temporarily noninfectious. Under similar circumstances an employee should be told that his employment will be interrupted until such time as he has complied with the same requirements. Such persons should be further advised that future employment is dependent on their willingness to continue under medical supervision until such time as an adequate amount of treatment has been administered to arrest the progress of the disease and/or effect a "cure."

When the examination of an applicant or employee shows evidence of a latent stage of the disease, especially syphilis, wherein the only evidence of infection is a positive serologic test, no delay in suitable employment is justified. The worker should be told of his condition and referred to his family physician or public clinic for reexamination. The provision of continued treatment is the same as previously described.

If the examination demonstrates a late manifestation of syphilis, such as cardiovascular syphilis or neurosyphilis, the worker should be told of his condition and referred for reexamination and treatment to such medical sources as have been mentioned. The question of employing or retaining the services of such an individual will depend on the extent to which the pathologic changes have progressed, the availability of a job that the worker is physically capable of performing and the question of industrial hazard.

The conference at the industrial physician's office is an opportune time to inform the worker regarding the venereal diseases. In order that he may cooperate intelligently with the requirements of treatment in maintaining his employment status, it will be necessary that he understand in a general way something about the disease from which he is suffering. This may be explained to him by a suitable person on the medical staff and by literature which the patient can read at his leisure.

FOLLOW-UP

It will be helpful and subsequently save considerable confusion if the industrial physician will provide the worker with a letter directed to his physician, stating the circumstances of the examination, results and what is expected of the worker as regards regularity of treatment, if he is to be employed. Whenever possible the plant physician should acquaint the worker with a reputable source for medical attention.

Should the worker be employed or his services continued, it is advisable that the industrial physician receive a record of treatment at about monthly intervals giving assurance that the patient is receiving appropriate medical attention.

In the event treatment is interrupted and the worker refuses to resume treatment, the industrial physician should notify the management that the employee is no longer fit for work. The names of such individuals should be turned over to the health department for appropriate action in bringing them back to treatment.

MORBIDITY REPORTS

As a rule, it devolves on the physician assuming the responsibility for diagnosis and treatment of patients with a venereal disease to submit case reports to the state or local health department. A primary function of the control program in industry is "case finding" and referral of persons with a venereal disease to competent sources for medical attention. Therefore it is the responsibility of the private physician or venereal disease clinic to submit such reports in most instances. However, in view of the urgent necessity of placing infectious syphilis and gonorrhea promptly under medical control, the plant physician making a tentative diagnosis of communicable syphilis or gonorrhea should without delay acquaint the appropriate health authority with the facts.

HANDBOOK OF NUTRITION: XV.

THE PRESERVATION OF THE NUTRITIVE VALUE OF FOODS IN PROCESSING

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These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—ED.

The prodigious increase in the consumption of succulent vegetables and fruits makes an interesting statistical study. A century ago most of the people of the United States regarded tomatoes as poisonous, and when children ate them inadvertently medication to counteract their "toxin" was not unusual. In 1918 Hess [1] recommended tomato juice as an antiscorbutic for 3 month old infants, and in later publications he stated that infants can tolerate twice as much tomato juice as orange juice. Today tomato juice is the leader in volume of an array of ever available fruit juices. Many a middle aged person who takes for breakfast a glass of orange juice comprising two or three normal size fruits can well remember when one such fruit in his Christmas stocking was his annual quota. Samuel Pepys once drank a whole glass of orange juice and was surprised that he did not become ill.

Less phenomenal growths have occurred in the consumption of all succulent vegetables, but their wide

From the Products Research Division, Campbell Soup Company.

1. Hess, A. F., and Unger, L. J.: Canned Tomatoes as an Antiscorbutic, Proc. Soc. Exper. Biol. & Med. **16**: 1-2 (Oct. 16) 1918.

distribution has eliminated seasonal and regional effects. How vegetables fit into present day nutritional aims has recently been pointed out in THE JOURNAL:[2] The average thiamine and riboflavin contents of a large number of vegetables are, respectively, 2.8 and 2.4 mg. per thousand calories, whereas the amounts added to enrich flour are 1 and 0.7 mg. respectively per thousand calories.

Even ancient man must have observed that certain root vegetables, such as parsnips, retain their edible qualities in the earth during extreme cold, while others, such as carrots, can stand only more moderate freezing and some are damaged by mild freezing. As a result, the vegetable pit was evolved as the most primitive method of processing succulent foods for their preservation, now exemplified in refrigeration under controlled temperature, humidity and atmospheric gases, and the recent modification designated "frosted" or "frozen foods."

Evidence that our vitamin age cannot lay claim to the first realization of the importance of the succulent and perishable foods in our nutrition is the evolution of the art of canning stimulated by the requirements of Napoleon's armies.

Paradoxical as it sounds, lack of heat (refrigeration) and application of heat (canning) have come to be the two major means of preserving perishable foods for use at all times and places. Today investigators are evaluating the efficacy of these in preserving essential nutrients, emphasizing, as has recently developed knowledge on nutrition, the vitamins. A short review of the many experiments conducted on this point can only touch on the most pertinent, but these make it possible by inference and analogy to draw certain general conclusions.

TABLE 1.—*Losses of Vitamin C from Apples*

Method of Cooking	Previously Submerged, per Cent	Not Submerged, per Cent
Apple sauce	58	91
Fried apples	68	80
Apple pie	91	92

EFFECT OF STORAGE AND COOKING ON VITAMIN C

Among the fruits, apples are prominent in lending themselves to cold storage. Recently, Eheart [3] reported an average loss of 20 per cent of the vitamin C content during twelve weeks in experiments involving sixteen varieties of apples, two seasons and temperatures ranging from 35.3 to 37.9 F. A loss of one third occurred in from eighteen to twenty-four weeks. Other investigators have reported lower losses at 32 F., the practical minimum for apple storage. In cooking apples Eheart encountered losses which could be ameliorated by previously keeping the peeled and cored apples submerged in a 2.5 per cent salt solution for twenty-four hours, the sodium chloride serving to keep the apples from darkening. The losses of vitamin C with three methods of cooking apples submerged and apples not submerged in salt solution are recorded in table 1. Kohman and Sanborn [4] showed in 1924 that in commercial canning apples submerged for sixteen hours at room temperature consumed all the oxygen within their tissues. This pretreatment is now accomplished in an hour at 120 F. Apples so treated may be canned without measurable loss of vitamin C and after a few months storage are more potent in this factor than similar apples stored under refrigeration.[5]

These experiments indicate that oxygen may play a distinctly destructive role toward vitamin C. They indicate but do not prove that heating is without effect. This was shown by increasing the normal processing of canned peas from twenty-five minutes to fifty minutes at 250 F.[6] without there being any increased destruction of vitamin C. Many foods have reducing effects on oxidized (dehydro) ascorbic acid, as was strikingly demonstrated in peas [7] and as the following unpublished experiment illustrative of a common behavior of many foods shows: Tomato juice was extracted without incorporating air and the ascorbic acid determined with 2,6-dichlorphenolindophenol. The juice was then divided into two portions, to one of which dehydro ascorbic acid was added. This did not affect the titration value. All the air was evacuated from both portions in pyrex glass flasks, which were sealed and heated for thirty minutes under boiling water. The titration value of the portion to which oxidized ascorbic acid had been added on cooling was 7.5 per cent higher than previously, whereas the other was unchanged. The fact that heating a food in itself need not be destructive of vitamin C must be kept in mind in considering the effect of cooking. Foods cannot be cooked without heat but they can be cooked in the absence of oxygen.

Floyd and Fraps [8] have made practical application of avoiding oxidation of ascorbic acid in household cookery. In a large number of trials, rapid cooking of turnip greens, maintaining a constant rise of vapors to blanket off the atmospheric oxygen, resulted in only 15.5 to 26.7 per cent destruction of vitamin C, while slow cooking caused 23.8 to 36.5 per cent destruction. Covering the cooking vessel had no protective effect.

Storage losses of ascorbic acid may be greater in some products than in apples. Maine grown Green Mountain and Irish Cobbler potatoes [9] in a month's storage at 15.5 C. lost 30 per cent ascorbic acid and in five months nearly 50 per cent. Lower storage temperatures for potatoes did not lower the losses. Loss in cooking becomes progressively greater with the following methods: steaming, boiling, baking and pressure cooking, but in no case did it exceed 25 per cent.

Clagett and Tottingham [10] found that potatoes of several varieties grown in Wisconsin and stored for nine months at 4.5 C. were 20 per cent lower in ascorbic acid content than Triumph and White Rose potatoes recently shipped to Wisconsin markets from the Pacific coast.

Schuenert and Reschke [11] made a comprehensive study in Germany of storing and cooking potatoes. Steaming was found to result in the least loss of ascorbic

2. Kohman, E. F.: Comparative Food Sources of Thiamine, J. A. M. A. **117:** 881 (Sept. 6) 1941.

3. Eheart, Mary S.: Factors Which Affect the Vitamin C Content of Apples, Virginia Agric. Exper. Sta., technical bulletin 69, March 1941, pp. 1-16.

4. Kohman, E. F., and Sanborn, N. H.: The Nature of Corrosion in Canned Fruits, Indust. & Engin. Chem. **16:** 290 (March) 1924.

5. Kohman, E. F.; Eddy, W. H., and Carlson, Victoria: Vitamin C in Canned Foods: II. The Vitamin C Destructive Factor in Apples, Indust. & Engin. Chem. **16:** 1261 (Dec.) 1924.

6. Eddy, W. H.; Kohman, E. F., and Carlson, Victoria: Vitamins in Canned Foods: III. Peas, Indust. & Engin. Chem. **18:** 85-89 (Jan.) 1926.

7. Kohman, E. F., and Sanborn, N. H.: Vegetal Reduction of Dehydroascorbic Acid, Indust. & Engin. Chem. **29:** 1195 (Oct.) 1937.

8. Floyd, W. W., and Fraps, G. S.: Changes in Vitamin C Content During Boiling of Turnip Greens in Various Waters in Covered and Uncovered Containers, Food Research **5:** 33-41 (Jan.-Feb.) 1940.

9. Rolf, Lydia A.: The Effect of Cooking and Storage on Ascorbic Acid Content of Potatoes, J. Agric. Research **61:** 381 (Sept.) 1940.

10. Clagett, C. O., and Tottingham, W. E.: The Reducing Substance and Phenolic Compound Content of Potato Tubers in Relation to Discoloration After Cooking, J. Agric. Research **62:** 349 (March) 1941.

11. Schuenert, A.; Reschke, J., and Kohlemann, E.: Ueber den Vitamin C-Gehalt der Kartoffelen, Biochem. Ztschr. **305:** 1 (June) 1940.

acid. They assign to peeled, halved and steamed potatoes the following progressively smaller values with the advancing winter months: October, 18 mg. per hundred grams; November, 15 mg.; December, 13 mg.; January, 11 mg.; February, 10 mg.; March, 9 mg.; April, 8 mg., and May/June, 7 mg.

Cabbage [12] stored in a home vegetable cellar at about 45 F. and relative humidity of 55 for two months dropped from an original vitamin B_1 content of 45 Sherman-Chase units to 40, while after being cooked in generous amounts of water for ten minutes the unstored and stored fell respectively to 23 and 20 units. The vitamin C content in fall and spring was, in the raw state, respectively 63 and 47 mg. per hundred grams and after cooking 35 and 27 mg. Onions were found to change insignificantly.

Wellington and Tressler [13] reported an actual loss of from 10 to 30 per cent of vitamin C in cooking cabbage by various methods, but the cooking water extracted as much as 66 per cent. With carrots [14] loss of 14 per cent of their vitamin C was observed both when boiled and when steamed, but the vitamin C remaining after steaming was nearly all in the carrots, whereas the cooking water extracted vitamin C in proportion to the volume.

Parsnips [15] containing in the fall from 12.8 to 39.9 mg. of ascorbic acid per hundred grams contained from 5.5 to 12.7 mg. after winter storage in the ground. Fall and spring parsnips boiled unpeeled contained respectively an average of 30.5 and 8.3 mg. of ascorbic acid per hundred grams, while boiled after peeling they contained respectively 15.3 and 7 mg.

Harris, Wissmann and Greenlie [16] noted an average loss of 44 per cent in ascorbic acid in a number of vegetables at 41 F. with relative humidity of 65 per cent as against a 26 per cent loss with a relative humidity of 93 per cent. While vitamin A and thiamine losses were less, they too were better preserved at the higher humidity.

Fitzgerald and Fellers [17] give the following average values, based on samples purchased weekly over a period of one year, for ascorbic acid in milligrams per hundred grams (table 2). Spinach [18] at from 1 to 3 C. lost its vitamin C very slowly, whereas at room temperature it lost half in three days and nearly all in seven days. Peas,[19] on the other hand, showed no appreciable loss of vitamin C in six days at 1 to 9 C. but considerable at 18 to 22 C. Lima beans,[20] shelled and unshelled, at 0 C. for eleven days lost respectively 58 and 31 per cent of their vitamin C content. Sweet corn [21] purchased on the market does not suffer a significant loss in vitamin C during its good quality history. Fresh corn cooked on the cob for eating (twelve minutes) lost 7 to 10 per cent of its vitamin C content. Mack, Tapley and King [22] reported that wax beans lost 81 per cent and Kentucky Wonder 58 per cent vitamin C in six days at from 21 to 23 C. and proportionately less in shorter periods. When wax beans were cooked to the done stage there was 62 per cent of the vitamin C in the drained solids and 26 per cent in the cooking water. The corresponding figures for Kentucky Wonder beans were 66 and 32, indicating a destruction of 12 and 2 per cent respectively.

Wheeler, Tressler and King [23] found that the ascorbic acid content of parsnips stored over winter in a pit dropped from 40 mg. per hundred grams in the fall to 15 mg. in the spring. Kale and New Zealand spinach lost half in four days at room temperature, while the loss in broccoli and cauliflower was only moderate. Wilting is always accompanied by serious loss of vitamin C.

Richardson and Mayfield [24] state that canned citrus juices and tomato juice after the can is opened lose no vitamin C in forty-eight hours, stored in a refrigerator. On the other hand, Gould and Tressler [25] found that holding cooked cabbage at 1 to 3 C. resulted in a loss of 50 per cent vitamin C in twenty-eight hours. The relative stability of vitamin C under such conditions has been shown [7] to be a characteristic of each product and not a function of the p_H or acidity, although influenced by them.

TABLE 2.—*Average Milligram Values for Ascorbic Acid per Hundred Grams*

	Broccoli	Spinach	Peas	Asparagus	Snap Beans
As purchased on wholesale market	77	35.0	15.5	12.5	10.0
24 hours later at 70 F.	60	20.0	14.8	10.0	8.5
48 hours later at 70 F.	50	18.5	14.0	10.0	7.5

Bananas [26] in three stages of ripeness contained, green, 6.1 mg. of ascorbic acid per hundred grams; yellow, 6.3 mg., and fully ripe, 7.3 mg. House, Nelson and Haber [27] found no difference in the vitamin B_1 content of green, mature and vine ripened tomatoes, but the latter contained more vitamin A and vitamin C and more than the green mature picked tomatoes after they were ripened either in air or with ethylene.

Bartlett pears were shown by Tressler and Moyer [28] to drop from 9 to 4.9 mg. of ascorbic acid per hundred grams during the first two months of storage at 30 F. and thereafter fall but little.

While modern cold storage allows but little loss of food value as a consequence of respiration, Benoy [29] has pointed out that with vegetables harvested in summer this may be a matter of serious proportions. Benoy

12. Mayfield, Helen L., and Richardson, Jessie E.: The Effect of Winter Storage on the Vitamin C Content of Cabbage and Onions, Montana State Bull. 379, February 1940, pp. 1-12.
13. Wellington, Mary Elizabeth, and Tressler, D. K.: Vitamin C in Vegetables: IX. Influence of Method of Cooking on Vitamin C Content of Cabbage, Food Research **3:** 311 (May-June) 1938.
14. Fenton, Faith; Tressler, D. K.; Camp, S. C., and King, C. G.: Losses of Vitamin C During Boiling and Steaming Carrots, Food Research **3:** 403 (July-Aug.) 1938.
15. Mayfield, Helen L., and Richardson, Jessie E.: Ascorbic Acid Content of Parsnips, Food Research **5:** 361 (July-Aug.) 1940.
16. Harris, R. S.; Wissmann, H. B., and Greenlie, David: The Effect of Reduced Evaporation on the Vitamin Content of Fresh Vegetables in Refrigerated Storage, J. Lab. & Clin. Med. **25:** 538 (May) 1940.
17. Fitzgerald, G. A., and Fellers, C. R.: Carotene and Ascorbic Acid Content of Fresh Market and Commercially Frozen Fruits and Vegetables, Food Research **3:** 109 (Jan.-April) 1938.
18. Tressler, D. K.; Mack, G. L., and King, C. G.: Vitamin C Content of Vegetables: I. Spinach, Food Research **1:** 3 (Jan.-Feb.) 1936.
19. Mack, G. L.; Tressler, D. K., and King, C. G.: Vitamin C Content of Vegetables: II. Peas, Food Research **1:** 231 (May-June) 1936.
20. Tressler, D. K.; Mack, J. L.; Jenkins, R. R., and King, C. G.: Vitamin C in Vegetables: VII. Lima Beans, Food Research **2:** 175 (March-April) 1937.
21. Dunker, C. F.; Fellers, C. R., and Fitzgerald, G. A.: Stability of Vitamin C in Sweet Corn to Shipping, Freezing and Canning, Food Research **2:** 41 (Jan.-Feb.) 1937.
22. Mack, G. L.; Tapley, W. T., and King, C. G.: Vitamin C in Vegetables: X. Snap Beans, Food Research **4:** 309 (July-Aug.) 1939.
23. Wheeler, Katherine; Tressler, D. K., and King, C. G.: Vitamin C in Vegetables: XII. Broccoli, Cauliflower, Endive, Cantaloupe, Parsnips, New Zealand Spinach, Kohlrabi, Lettuce and Kale, Food Research **4:** 593 (Nov.-Dec.) 1939.
24. Richardson, Jessie E., and Mayfield, Helen L.: The Vitamin C Content of Winter Fruits and Vegetables, Montana State Bull. 390, 1941, pp. 1-16.
25. Gould, Stella, and Tressler, D. K.: The Vitamin Content of Vegetables, Food Research **1:** 429 (Sept.-Oct.) 1938.
26. Leverton, Ruth: Ascorbic Acid Content of Bananas at Three Stages During Ripening, Food Research **2:** 59 (Jan.-Feb.) 1937.
27. House, Margaret C.; Nelson, P. Mabel, and Haber, E. S.: The Vitamin A, B and C Content of Artificially versus Naturally Ripened Tomatoes, J. Biol. Chem. **81:** 495 (March) 1929.
28. Tressler, D. K., and Moyer, J. C.: Changes in Vitamin C Content of Bartlett Pears in Cold and Gas Storage, Food Research **6:** 273 (July-Aug.) 1941.
29. Benoy, Marjorie, P.: The Respiration Factor in the Deterioration of Fresh Vegetables at Room Temperature, J. Agric. Research **39:** 75 (July) 1929.

found that the carbon dioxide given off at 30 C. during the second to the twenty-sixth hour after being harvested accounted for a loss of several per cent of the sugar from vegetables as follows: asparagus 13.7 per cent, lettuce 6.4 per cent, green beans 6.3 per cent, okra 5.2 per cent, carrots 4.5 per cent, tomatoes 3.2 per cent and beets 2.7 per cent. The serious aspect of this loss is that the flavor loss is of even greater proportions.

Olliver [30] points out that while water soluble constituents tend to be extracted in the boiling of vegetables, this loss may be minimized and the extractives used by keeping the water at a minimum and using it. All the vitamin A and from 70 to 75 per cent of the vitamin B_1 is retained, and while from 40 to 75 per cent of the vitamin C may be extracted less than 10 per cent is actually destroyed. In the present war period, she points out, cooked vegetables constitute the chief source of vitamin C in England. While sodium, potassium and chlorine are extracted, they are dietetically unimportant, and calcium is not extracted.

It is evident from the array of evidence cited that storage, cooking and other treatments to which vegetables and fruits are subjected may have a strong effect on their vitamin C value. It is evident also that these effects in many instances can be greatly minimized with care such as maintaining ideal storage and adopting appropriate cooking procedures. Heat in cooking is responsible for no serious vitamin C loss.

TABLE 3.—*International Units of Thiamine per Gram of Various Prepared Beans*

	Michigan Beans	Cranberry Beans
Raw	1.7	0.9
Boiled in soaking water	3.0	2.9
Boiled in fresh distilled water	2.9	2.8
Soaked with soda, boiled in fresh water	2.8	2.9
Baked in soaking water	2.3	1.9

The reason for all these data presented on vitamin C is twofold. Of the vitamins, only in the case of C has it been possible to assay many foods by chemical means. Secondly, it is not uncommon, as Fenton [31] has done, to use the retention of vitamin C in vegetables as a criterion of both quality and nutritive value in general.

EFFECT OF STORAGE AND COOKING ON OTHER NUTRIENTS

Data on nutritive value as affected by processing are not limited entirely to vitamin C. Aughey and Daniel [32] report that there was no loss of thiamine in pressure cooking or boiling carrots; 16 per cent loss in baking potatoes; 20 per cent in pared and boiled potatoes; 22 per cent in boiled spinach; 9 per cent in simmered green peas, and 22 per cent if soda is added; 18 per cent in boiled beans and 59 per cent if soda is added; no loss in boiled navy beans; no loss in rolled oats or wheat cooked in a double boiler; 14 per cent loss in baking bread; 15 per cent in braised pork loin, and 43 per cent loss in roast pork. Kelly and Porter [33] give, in international units of available thiamine per gram, values of variously prepared beans of two types (table 3).

Lantz [34] found that neither the riboflavin nor the B_6 of pinto beans in the raw state was utilized by rats but both were well utilized in the cooked beans. The cooked beans had 8 micrograms of riboflavin per gram, with negligible quantities in the cooking water.

Oldham and Schlutz [35] demonstrated that heating meat, as in cooking or drying, renders the total iron of beef muscle as available to infants as equivalent amounts of inorganic iron, whereas the iron of unheated lean meat is generally agreed to be but poorly utilized. Mickelsen, Waisman and Elvehjem [36] found nicotinic acid and riboflavin stable to most cooking processes in meats, and while thiamine suffers some loss it is least affected by frying in meat products. Hodson [37] found stewing, roasting, broiling or frying chicken had no effect on the riboflavin content.

BLANCHING FOR FROZEN AND CANNED FOODS

Many of the recorded experiments purporting to show the extraction effect of blanching are so far from actual conditions in commercial use that they are misleading. For example, Magoon and Culpepper [38] scalded 1,700 Gm. of spinach and peas in 16,000 cc. of boiling distilled water each for two and four minutes and green beans for four and eight minute periods. They state that in the case of spinach as much as 16 to 30 per cent of the total dry matter might under such conditions be extracted while, in the case of green beans, as little as 1.5 to 10 per cent was extracted, the values for peas lying in between. These, however, represent far more severe conditions than obtain in commercial blanching, in which a continuous stream of vegetables passes through a limited amount of water, which is replenished by the amount carried out by the vegetable. Under these conditions the proportion of water to vegetable is small and, obviously, the extractive effect thereby limited. Horner [39] noted that in blanching the losses of potassium ranged from 9 per cent in potatoes to 40 per cent in beans; phosphorus from 9 per cent in potatoes to 20 per cent in peas, and magnesium from 13 per cent in carrots to 25 per cent in peas and potatoes. Calcium is actually absorbed from the hard water used for blanching. As Olliver [30] has pointed out, extraction of potassium, sodium and magnesium is of no dietetic importance.

Some experiments on the extractive effect of blanching on the vitamin content are on record. Todhunter and Sparling's [40] values are given in table 4. Finke [41] states that peas blanched for two minutes at 71 C. had 4 micrograms of thiamine per gram and only 2.6 when blanched two or three minutes at 99 C.

There is so much inconsistency in these figures that one is not warranted in drawing far reaching conclusions. When in one case the ascorbic acid is 9.1 mg.

30. Olliver, Mamie: The Effect of Cooking on the Nutritive Value of Vegetables, Chem. & Indust. **60**: 586 (Aug.) 1941.
31. Fenton, Faith: Vitamin C Retention as a Criterion of Quality and Nutritive Value in Vegetables, J. Am. Dietet. A., June-July, 1940, pp. 524-535.
32. Aughey, Elizabeth, and Daniel, Esther P.: Effect of Cooking upon the Thiamine Contents of Foods, J. Nutrition **19**: 285 (March) 1940.
33. Kelly, Eunice, and Porter, Thelma: Effect of Cooking upon the Vitamin B_1 Content of Two Types of Beans Grown in Michigan, Food Research **6**: 85 (Jan.-Feb.) 1941.
34. Lantz, E. M.: Effect of Cooking on Riboflavin and Vitamin B_6 Content of Pinto Beans, New Mexico State Bull. 268, December 1939, pp. 1-16.
35. Oldham, Helen; Schlutz, F. W., and Morse, Minerva: Utilization of Organic and Inorganic Iron by the Normal Infant, Am. J. Dis. Child. **54**: 252 (Aug.) 1937.
36. Mickelsen, O.; Waisman, K. A., and Elvehjem, C. A.: Recent Studies on the Vitamin Content of Meats and Meat Products, J. Am. Dietet. A. **15**: 529 (Aug.-Sept.) 1937.
37. Hodson, A. Z.: Effect of Cooking on Riboflavin Content of Chicken Meat, Food Research **6**: 175 (March-April) 1941.
38. Magoon, C. A., and Culpepper, C. W.: Scalding, Precooking and Chilling as Preliminary Canning Operations, U. S. Department of Agriculture, Bulletin 1265, November 1924, p. 48.
39. Horner, G.: Progress Report on the Mineral Content of Canned Vegetables, University of Bristol Fruit and Vegetable Preservation Research Station, Campden, Ann., Sept. 1936-1937, pp. 51-56.
40. Todhunter, Elizabeth-Neige, and Sparling, B. L.: Vitamin Values of Garden Type Peas Preserved by the Frozen Pack Method, Food Research **3**: 489 (Sept.-Oct.) 1938.
41. Finke, Margaret L.: Vitamin Value of Garden Type Peas Preserved by Frozen Pack Method: III. Thiamine, Food Research **4**: 605 (Nov.-Dec.) 1939.

per hundred grams with a six minute blanch and only 7.2 with a four minute blanch, then there is no basis for assigning any significance to another case in which it is 22.6 for the six minute blanch while it is 23.2 for the four minute blanch. As for the thiamine values of Finke, it should be borne in mind that the feeding levels were 0.8 Gm. and 1.2 Gm. of peas a day and that the growth response for the 1.2 Gm. dosage was so great that it had to be discarded when the thiamine level was evaluated. Yet there is sufficient evidence to warrant the statement that the greater part of the loss of vitamin C in canning occurs before the vegetable enters the can. This is in part due to extraction and in part to destruction. The matter is not so simple in frozen vegetables.

FROZEN FOODS

In recent years so-called frosted or frozen foods have appeared in retail form. Long before, however, it was customary to freeze certain fruits, chiefly berries, in barrels with or without sugar, for the purpose of later converting them into jams, preserves and jellies. They were frozen without any precooking. When attempts were made to extend this freezing method to vegetables it soon became apparent that their normal flavor could not long be retained. Vegetables so frozen soon acquire what is commonly referred to as a haylike flavor. This was traced to the effect of enzymes whose activity is not completely inhibited even in the frozen state. It is a well known fact that abnormal activity of enzymes is aroused in a broken, raw vegetable cell. While much has been said about "quick freezing" as a means of reducing the size of ice crystals that may otherwise pierce or rupture the cells, the fact of the case is that the rupturing of the raw vegetable cell cannot be avoided, irrespective of the rapidity with which freezing is accomplished. I was convinced of this experimentally in 1928 by the use of liquid air as a freezing medium. So-called quick freezing of vegetables has virtues only in that it reduces the development of microorganisms as well as the action of atmospheric oxygen on the food, for example, on vitamin C.

It is now customary to blanch all vegetables before freezing to inactivate the enzymes and, for canning, blanching is necessary to expel air to avoid straining the hermetic seal in processing and to reduce the volume and enable compact filling. Temperatures up to or less than boiling water for one to a few minutes have been found adequate.

The gases in most vegetables are relatively low in oxygen content in comparison with the oxygen of the air, owing to the fact that the respiratory process constantly taking place in raw vegetables tends to use up the oxygen within the tissues. The blanching, as can be surmised from the relatively low loss of vitamin C in cooking vegetables, has no serious destructive effect on vitamins.

However, after the vegetables are blanched their oxygen-consuming enzymes are inactivated. Glutathione and hydrogenases in them no longer exert their reducing effect.[7] The vegetables now become saturated with oxygen; this oxygen becomes a serious agent in vitamin C loss with storage if low temperatures are not at all times maintained. This is a matter of particular concern if frozen vegetables are thawed an appreciable time before being used. As the vegetables must be cooked for table use, the vitamin C may now suffer a greater loss than when raw vegetables are cooked directly for table use.

Rose,[42] who reviewed the literature on frozen foods, has pointed out the importance of their being kept in the frozen state up to the time they are to be cooked for use. Fellers and Stepat [43] found the average ascorbic acid content of thirteen samples of frozen peas to be 13.1 mg. per hundred grams, but after they had been defrosted from two to six hours the average value dropped to 4.1 mg. Todhunter and Sparling [40] claimed that peas thawed within thirty minutes lost 27 per cent in one hour thereafter. At 4.5 C. 25 per cent was lost in twenty-four hours. This represents keeping the peas in a refrigerator for thawing. Jenkins and Tressler [44] reported losses from negligible to 20 per cent in six months at 0 F. and much higher losses at 10 to 15 F., ranging from approximately 40 per cent to more than 90 per cent in various products. McIntosh and Tressler [45] found a variable loss of vitamin C up to 14 per cent in cooking a number of frozen vegetables for table use in various ways with from 13 to 30 per cent in the liquor and from 70 to 80 per cent in the solids, the amount in the liquid depending on the amount of cooking water.

It appears from these data and others that it is important not only to freeze vegetables quickly but to maintain a low storage temperature and to prevent thawing until such time as they are to be cooked for the table.

TABLE 4.—*Extractive Effects of Blanching on Ascorbic Acid Content*

Time, Minutes	Blanch		Ascorbic Acid, Mg. per 100 Gm.
	Temperature	Kind	Peas
1	99 C.	Water	21.0
2	99 C.	Water	18.5
3	99 C.	Water	17.0
1	99 C.	Steam	18.8
2	88 C.	Water	21.2
4	88 C.	Water	23.2
6	88 C.	Water	22.6
2	88 C.	Water	8.1
4	88 C.	Water	7.2
6	88 C.	Water	9.1

CANNING

Canning was the first method of preserving foods to receive scientific study. The latest report of the National Resources Planning Board states "No better example of the value to be obtained from a trade association's operation of its own technical research laboratory can be cited. . . . The industry quickly availed itself of the association laboratory's findings and put its recommendations into effect in processing. . . . The industry has benefited in many ways, . . . the public has benefited through having made available a very wide variety of wholesome foods at lower costs." In another connection the report states "The production of vegetables suitable for canning has inspired some lines of important research." Agricultural experiment stations of many states have had a hand in developing varieties especially suitable for canning. Canning factories are located in the center or vicinity of the areas supplying them. Deterioration of raw produce due to storage is not a problem. Each crop may be harvested

42. Rose, Mary Swartz: The Effect of Quick Freezing on the Nutritive Value of Foods, J. A. M. A. **114**: 1356 (April 6) 1940.
43. Fellers, C. R., and Stepat, W.: Effect of Shipping, Freezing and Canning on the Ascorbic Acid Content of Peas, Proc. Am. Soc. Horticultural Science **33**: 627, 1935.
44. Jenkins, R. R.; Tressler, D. K.; Moyer, J., and McIntosh, Jennie: Vitamin C Experiments, Refrig. Engin. **39**: 381 (June) 1940.
45. McIntosh, Jennie A., and Tressler, D. K.: The Effect of Different Cooking Methods on the Vitamin C Content of Quick Frozen Vegetables, J. Home Econ. **32**: 692 (Dec.) 1940.

when it is at its prime. No allowance need be made for ripening in transit, thus permitting full development on tree or vine.

The chief feature in canning foods is the application of sufficient heat to destroy spoilage organisms. This in many cases is more than is necessary for table use. One of the most notable effects is the change in green vegetables from a bright green to an olive green. This has been in part linked [46] to a lowering of the p_H value which generally occurs in cooking foods, the degree depending on the time and temperature. Since chlorophyll has never been found to possess nutritional functions, nor the change in p_H to have any nutritional significance, these effects need not be discussed here.

Fixsen [47] has tabulated effects of cooking and canning. That processing is without effect on vitamin A is evidenced by the experiments of Steenbock and Boutwell,[48] who autoclaved yellow maize, chard, carrots, sweet potatoes, squash and alfalfa for three hours at 250 F. without affecting the vitamin A. This is far more severe than any canning process.

Arnold and Elvehjem [49] studied the effect of processing dog food meat in 1 pound cans. The following thiamine losses were noted in a process of two hours at 240 F.: beef kidney 80 per cent, beef lung 75 per cent, and beef spleen 70 per cent. Leg muscle in one hour and fifty minutes at 250 F. lost 80 per cent. In a sample of "meat food product" which "contained a small amount of grains" the following losses were noted: at 240 F. in one hour 60 per cent, in one and one-half hours 67 per cent, in two hours 70 per cent, in one hour and fifty minutes at 250 F. 80 per cent. An interesting feature of these data is that doubling the process time raised the destruction only from 60 to 70 per cent, yet the product received a more severe heat treatment during the second hour because a considerable part of the first hour was required for the heat to penetrate the material in the can. The necessary processing time for such a product lies between one and two hours. The p_H of these products was between 6 and 7, whereas that of vegetables is approximately one p_H unit lower and the stability toward heat is much greater at the lower p_H. With lower p_H and better heat penetration for most vegetables the process is correspondingly less severe. In the absence of direct data on the various vegetables it may be inferred that destruction of vitamin B_1 in general canning is far less than the losses cited.

Schlutz and Knott [50] tested four lots of milk by feeding experiments before and immediately after evaporation and canning and found respectively 34, 24, 21 and 20 per cent losses. One sample, which contained 80 international units per quart when first canned, contained 68 after two months' storage and 59 international units after four months. Two other samples, which lost originally 20 and 21 per cent of their B_1, with eight months' storage lost an additional 37 and 42 per cent respectively.

The best evidence of the stability of vitamin C to the heat of canning is the fact, such as described with tomato juice, that many foods when heated with dehydro ascorbic acid will actually reduce it to ascorbic acid. This explains many of the observations of McHenry and Graham [51] and others that heating, in the case of several vegetables, increased the titration value toward 2,6-dichlorophenolindophenol. Unsuccessful attempts have been made to explain such phenomena on the basis that ascorbic acid is in part held in some complex combination, and this heating hydrolyzes it. Many foods when processed in the can actually have a higher titration value after the process. Doubling the commercial process of canned peas [6] from twenty-five to fifty minutes at 250 F. did not lower their value as an antiscorbutic for guinea pigs. Tomatoes [52] and apples [3] were shown to suffer no loss of ascorbic acid in canning, although it was necessary to deplete the apples of oxygen by the so-called soaking process already referred to.[3]

Perhaps the most significant data on the nutritional value of canned foods has been obtained in a number of experiments in which a diet entirely of canned foods was fed. While it may be said, with whatever justification, that human beings over many generations have adapted themselves to a cooked food diet, this cannot be said of rats and guinea pigs. Yet both species of animals, the rats over ten generations and the guinea pigs over seven, thrived better on a canned food diet than on a diet of similar foods uncooked, according to Kohman, Eddy, White and Sanborn.[53] Foods for these experiments were purchased in the New York City markets as they would be for family use.

Cooking of foods renders the calcium more available. The vitamin A of foods like peas and spinach has been found to be more readily available after cooking. Reference has already been made to such an effect on vitamin B_1 and riboflavin in various beans. The protein of all legumes is improved nutritively by being subjected to heat.

In France Cheftel,[54] after feeding rats canned and noncanned foods over a period of fourteen generations, reported that when individuals of the two groups were put on a vitamin A-free diet at the Pasteur Institute those having been raised on canned foods showed the first symptoms of vitamin A deficiency two weeks later than those raised on noncanned foods.

Godden [55] in Great Britain fed, on a comparable basis, (1) drained canned foods, (2) total canned foods (solid and liquid) and (3) home cooked foods from which the cooking water was discarded. On a basis of reproduction, milk supply and growth, the first and last diets yielded comparable results but the canned food diet with the liquor included was unsatisfactory because of its bulkiness. This difficulty is in evidence only when too much of the diet is made up with foods with considerable liquid. The matter can readily be corrected by inclusion of higher calory foods such as pork and beans, macaroni and cheese, and brown bread, all of which are readily available in canned form. Subsequently, Godden and Thomson [56] made many observations over several gener-

46. Blair, J. S.: Color Stabilization of Green Vegetables, U. S. Patent 2,186,003, Jan. 9, 1940.

47. Fixsen, Margaret A. Boas: The Vitamin Content of Human Foods as Affected by Processes of Cooking and Canning, Nutrition Abstr. & Rev. **8**: 281-307 (Oct.) 1938.

48. Steenbock, H. A., and Boutwell, P. W.: Fat-Soluble Vitamin, J. Biol. Chem. **41**: 163 (Feb.) 1920.

49. Arnold, A., and Elvehjem, C. A.: Processing and Thiamine, Food Research **4**: 547 (Nov.-Dec.) 1939.

50. Schlutz, F. W., and Knott, Elizabeth M.: Factors Affecting the Vitamin B_1 Content of Evaporated Milk, Soc. Exper. Biol. & Med. **40**: 532 (April) 1939.

51. McHenry, E. W., and Graham, Murray: Observations on the Estimation of Ascorbic Acid by Titration, Biochem. J. **29**: 2013 (Sept.) 1935.

52. Kohman, E. F.; Eddy, W. H., and Guerin, Celia Zall: Canning of Tomato Juice Without Vitamin C Loss, Indust. & Engin. Chem. **25**: 682 (June) 1933.

53. Kohman, E. F.; Eddy, W. H.; White, Mary Elizabeth, and Sanborn, N. H.: Comparative Experiments with Raw, Home Cooked and Canned Food Diets, J. Nutrition **14**: 9 (July) 1937.

54. Cheftel, H.: Nutritional Value of Canned Foods, Food **7**: 47 (Nov.) 1937.

55. Godden, W.: Nutritive Value of Canned Foods in Great Britain, Food **7**: 48 (Nov.) 1937.

56. Godden, W., and Thomson, W.: The Nutritive Value of Canned Foods, J. Soc. Chem. Ind. **58**: 81 (March) 1939.

ations on canned and uncanned foods and found no basis for distinguishing between the two.

A word is in order regarding the containers for canned foods. Daniels and Rutherford [57] claim better vitamin preservation in tin than in glass. Fellers and Buck [58] point out that entrapped oxygen in commercially packed puréed peas, spinach and tomato juice may not disappear until twenty to sixty days after being packed in glass. Vitamin losses occurred mostly during this period and relatively little after six months. Glass covers for glass containers are of necessity dome shaped, and this inevitably entraps more air than the cover of the tin can. Commercial canning minimizes this entrapped air in glass canning by vacuum closure, which the home canners cannot employ.

It may be added that traces of entrapped air in tin cans disappear completely within twenty-four hours in a plain can but may persist for several days in an enameled can. This prompt disapearance of oxygen in a tin can is a consequence of the high reduction potential of the film of nascent hydrogen with which tin in contact with foods coats itself. This film is of great value both in furnishing a reducing atmosphere and in furnishing protection for the tin against the action of the food on it.

DEHYDRATION

Dehydration is limited largely to a few fruits—prunes, raisins, peaches, apples, apricots, figs, dates and the like. Vitamin C suffers almost complete destruction in most dehydrated products. The vitamin C protective effect of sulfuring (to prevent darkening of the light colored fruits) was shown by Morgan, Field and Nichols.[59] This same sulfuring process may, however, prove to be as destructive to vitamin B_1 as it is protective for vitamin C. When first sulfured, the fruits may contain sulfur dioxide from 2,500 to 10,000 parts per million. The splitting of thiamine into its thiazole and pyrimidine components by sulfur dioxide was the clue to its identification. The quantitative determination of thiamine by the microbiologic (yeast) method has as its basis the complete splitting of its molecule by sulfite. Treatment with sulfur dioxide is one means of preparing a vitamin B_1 free diet for experimental work.

Dehydration of vegetables, usually stimulated during wartime, has not met with a high degree of satisfaction as yet, so far as is reported. In most cases the flavor changes are too pronounced. Rancid and haylike flavors commonly develop. Dehydration of eggs and of milk, particularly skim milk, is proving very useful, and according to recent reports this is true also of lean meat. Since moisture free butter fat stores well, it makes possible, with dehydrated skim milk, to have reconstituted milk suitable for many purposes. While the nutritive value of dehydrated vegetables for food for human beings seems not to have been given especial attention, some deductions may be made. Fraps and Kemmerer [60] found that when fish oils are mixed with poultry feed from 79 to 100 per cent of the vitamin A is lost within a month. Taylor and Russell [61] state that dried and chopped alfalfa hay stored in a bag lost 50 per cent of its carotene content in three months and the remaining carotene became less potent. In this connection it is interesting to note that even in raw carrots a tenfold variation in carotene and depth of color has been accompanied by little more than a twofold variation in vitamin A potency. It is thus possible that dehydrated vegetables retain their vitamin A values but poorly, and there is ample evidence that vitamin C is almost completely lost. In recent developments, vegetables are being blanched before dehydration. It is still problematic what will be the effect of the blanch.

MISCELLANEOUS PROCESSES

The distinctly inferior nutritive value of bleached vegetables is not commonly realized. Plant breeding has produced firmer heads of lettuce and cabbage and less green on celery, but Crist and Dye [62] have pointed out that the green outer leaves are many times richer not only in vitamin A but also in nearly all the mineral elements. They are known to be richer in vitamin C also, and probably in other vitamins as well. It is fortunate, therefore, that in recent years green asparagus for canning has become more popular.

The legal standards for jellies, jams and preserves demand a minimum of 45 pounds of fruit to 55 pounds of sugar. The final product must have a minimum of 65 per cent solids in the case of certain fruits and 68 per cent in others. This makes it necessary to evaporate about 10 per cent of the water in the fruit in the process of making conserves. In commercial practice this requires a relatively short time and ascorbic acid losses may be 10 to 15 per cent, and under vacuum even less. There is some evidence that the sugar has a stabilizing effect on ascorbic acid. Further than this little information on nutritive value is available except that the high sugar content makes the caloric value of conserves overshadow other nutrients. From various foreign countries come reports of the importance of conserves in this emergency as vitamin C sources by making possible the utilization of heretofore little used items, chief of which are rose hips. Not all rose hips are rich in vitamin C, however. Some contain only a few milligrams of ascorbic acid per hundred grams, some are equal to and others several times as rich as tomatoes.

Spoilage is prevented in dehydrated foods because they lack the water necessary for micro-organisms. In conserves the high sugar content makes the water unavailable by osmosis. Because of its smaller molecule, much smaller percentages of sodium chloride will preserve foods, but in removing excess salt soluble food constituents are removed.

The hydrogenation process has made available for human consumption much vegetable fat. From the work of Hoagland and Snider [63] and of Sherman [64] it is to be inferred that hydrogenation lowers the digestive coefficient and that the loss of unsaturation causes inferiority as respects other nutritive phases. That this is of any practical dietary significance is not known.

Ethylene treatment of fruits is not believed to influence any nutritional quality. It merely hastens processes already taking place.

57. Daniels, Esther P., and Rutherford, M. B.: Effect of Home Canning and Storage on Ascorbic Acid Content of Tomatoes, Food Research **1**: 341 (July-Aug.) 1936.

58. Fellers, C. R., and Buck, R. E.: Retention of Vitamins C and A in Glass Packed Foods, Food Research **6**: 135 (March-April) 1941.

59. Morgan, Agnes Fay, Field, Anna, and Nichols, P. F.: The Effect of Cooking on the Vitamin A and C Content of Fresh and Dried Apricots, J. Agric. Research **46**: 841 (May) 1933.

60. Fraps, G. S., and Kemmerer, A. R.: Losses of Vitamin A and Carotene from Feeds During Storage, Texas Agric. Exper. Sta. Bull. 557, 1937, pp. 1-27.

61. Taylor, M. W., and Russel, W. C.: The Stability of Carotene in Plant Tissues, J. Nutrition **16**: 1 (July) 1938.

62. Crist, J. W., and Dye, Marie: The Association of Vitamin A with Greenness in Plant Tissue, J. Biol. Chem. **81**: 525 (March) 1929.

63. Hoagland, R., and Snider, G. G.: Nutritive Properties of Steam-Rendered Lard and Hydrogenated Cotton Seed Oil, J. Nutrition **22**: 65 (July) 1941.

64. Sherman, W. C.: The Effect of Certain Fats and Unsaturated Fatty Acids upon the Utilization of Carotene, J. Nutrition **22**: 153 (Aug.) 1941.

The baking of bread is said by Hoffman, Schweitzer and Dalby [65] to result in a loss of from 5 to 9 per cent of the thiamine content. This loss occurs largely in the crust. Toasting causes another loss, ranging from 12 to 24 per cent.

There is no evidence that fermentation, as occurs in the making of sauerkraut, in pickling or in wine making, has a specific effect on any of the vitamins; nor are the vitamins in any fermented product any less subject to adverse conditions than they are in the unfermented.

CONCLUSIONS

Modern methods of food distribution supply us with vegetables and fruits of numerous varieties in many forms. Vegetation extracts minerals from the earth, usually in suitable proportions, and synthesizes our vitamin supply. Until subjected to heat, fruit and vegetables are live tissue and as such constantly undergo changes, some of which are detrimental. Methods have been devised to limit such changes, but whether it is for storage, frozen, dehydrated or canned foods, there still remains work to be done to ascertain more definitely the extent of changes that take place for each type of commodity under the various conditions to which it may be subjected and to find ways of minimizing still further undesirable changes. It is obvious even now that to use vegetables and fruits generously in our diets is in accord with our aims in nutrition today.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE VALUABLE ASSISTANCE RENDERED IN THE PREPARATION OF THIS REPORT BY DRS. GEORGE M. COATES, EDWIN P. FOWLER, W. E. GROVE, WALTER HUGHSON, ISAAC H. JONES, DEAN M. LIERLE, DOUGLAS MACFARLAN, C. STEWART NASH, HORACE NEWHART, PAUL E. SABINE AND BURT R. SHURLY.

HOWARD A. CARTER, Secretary.

MINIMUM REQUIREMENTS FOR ACCEPTABLE AUDIOMETERS [1]

1. Audiometers shall produce vibrations at frequencies within hearing range (approximately 128 to at least 8,192 cycles per second).

(*a*) They shall be equipped for testing both air and bone conduction.

2. Frequencies: (*a*) Fixed or continuous frequencies from 128 to 8,192 cycles per second. If discrete frequency steps are provided, the tones shall be 128, 256, 512, 1,024, 2,048, 4,096, 8,192 cycles per second. Numerical annotations to be used to designate pitch.

(*b*) The frequency of any test tone shall remain within ± 5 per cent of the designated value under the manufacturer's specified or indicated operating conditions. Dials shall be marked so that frequencies may be identified readily.

3. Attenuation: Audiometers shall be calibrated in decibels, with 5 decibels per step or less. In no case should more than 5 decibel steps integral be used. Toleration limits are to be within ± 1½ decibels per 5 decibel steps and ± 5 decibels cumulative at any portion of the intensity range calibrated in a room free from extraneous noises. Dials shall be easily read. The term "percentage hearing" shall not be used on dial or charts. Hearing losses shall be reported in decibels units loss.

4. Range of intensity (air conduction only): The intensity range of the test tones above the normal threshold shall be at least that as follows:

Test Tone Cycles per Second	Intensity Range Decibels
128	60
256	80
512	85
1,024	90
2,048	90
4,096	90
8,192	70

5. Wave form: The purity of tone in the air conduction receiver shall be such that the harmonics at any particular frequency shall be at a level not less than 25 decibels as measured on the closed coupler artificial ear of from 4 to 5 cc. in volume; except for discrete frequency of 128, the harmonics shall be at a level not less than 20 decibels.

6. Extraneous noises: (*a*) The level above threshold of the sound (for normal hearing people) caused by line noises (hum and commutator ripple) and all other instrument noises shall be at least 60 decibels below the level of the test tone for frequencies of 1,024 cycles per second and higher frequencies, and at least 40 decibels below the level of the test tone for frequencies below 1,024 cycles per second.

(*b*) A bone conduction receiver shall be so constructed that it does not produce sound in the air to such an extent that the sound reaching the tympanum through the auditory meatus could influence the validity of the bone conduction measurement. When the bone conduction receiver is placed in approximately the same position as is used in testing bone conduction but is held just off the head instead of in contact, the level of the sound reaching the tympanum shall be at all frequencies at least 5 decibels below the level which the receiver generates by bone conduction when in contact with the head, as judged by a normal ear.

7. Power supply: This is to be either alternating or direct current or battery.

8. Ruggedness of construction: Audiometers shall stand reasonable usage. Employment of readily obtainable and replaceable parts is required.

9. Uniformity in calibration: Audiometers shall be calibrated thus: Intensity in decibels and frequency in number of vibrations per second.

10. Standard for reference normal threshold by air conduction for audiometers for general diagnostic purposes: The standard for reference normal threshold by air conduction for audiometers for general diagnostic purposes shall be as given by the average voltage across three standard receivers maintained at the National Bureau of Standards and determined by transfer measurements from Western Electric 552 Receivers of 2A Audiometers and representing the reference normal threshold given by the U. S. Public Health Service 1936 National Health Survey.

Frequency of Test Tone (Cycles per Second)	Standard for Reference Normal Threshold by Air Conduction as Given by Average Voltage Across Three Standard Receivers. (Decibels from 1 Volt)
128	—73.0
256	—88.0
512	—102.0
1,024	—109.0
2,048	—111.5
4,096	—107.0
8,192	—75.0

11. Audiogram or auditory chart: An audiogram blank shall use the same base line for bone conduction results as for air conduction results. The chart shall be as simple as possible. The coordinates of the charts shall be some appropriate number

65. Hoffman, Charles; Schweitzer, T. R., and Dalby, Gaston: The Loss of Thiamine in Bread in Baking and Toasting, Cereal Chemistry **17**: 737 (Nov.) 1940.

1. A clinical audiometer is an instrument for measuring the acuity and range of hearing.

of decibels and octaves or fractions of an octave. In order that the chart may present a suitable visual impression there shall be a ratio of 1 to 2 between the dimension of a 10 decibel step and that of an octave step.

12. Definition of threshold of hearing: The American Tentative Standard Acoustical Terminology defines the normal threshold of audibility as the modal value of the threshold of audibility of a large number of normal ears of persons in the age group from 18 to 30 years. For purposes of recording, the threshold of audibility at any frequency is the audiometer setting corresponding to the lowest intensity at which the person being tested indicates that he hears the tone more than half of the number of times that it is presented to him.

13. The manufacturer shall guarantee in writing:

(1) that one year from date of purchase the manufacturer will recalibrate and put in acceptable operating condition at no cost to the purchaser, other than transportation charges, any audiometer of his manufacture that may develop defects except when such defects are due to improper care or accident;

(2) that at any time within five years from date of purchase the manufacturer will rebuild at a reasonable cost or replace parts necessary to bring an audiometer of his make to a satisfactory working condition;

(3) that the maker will provide adequate instructions for the proper care and upkeep of his products and will encourage the purchaser to send his audiometer at reasonable intervals to the factory or to a qualified distributor for check as to performance and needed servicing at a reasonable cost.

14. Marketing and advertising: Rules of the Council on Physical Therapy shall be adhered to by manufacturers of acceptable audiometers.

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

MAICO HEARING AID, MODEL 42, ACCEPTABLE

Manufacturer: The Maico Company, Inc., 2632-2636 Nicollet Avenue, Minneapolis.

The Maico Hearing Aid, Model 42, consists of a combined microphone and vacuum tube amplifier unit contained in a molded case 4½ by 2½ by 1 inches, weight 4⁶⁄₁₀ ounces, and A and B battery unit in leather case 4½ by 3¾ by 1¼ inches, weight 12½ ounces, and crystal receiver ³⁄₁₆ by 1 inch in diameter.

Maico Hearing Aid, Model 42

BATTERIES

A feature of the instrument is a plug resistor which can be inserted in the circuit between the A and B batteries, serving to reduce the A battery current when new batteries are in use. Its removal, as the battery grows old, should appreciably increase usable battery life, voltages and currents. The voltages and current drains are:

	Voltage	Current
A battery, Maico Extra Life #499	1.5 without resistor	105 milliamperes
	1.3 with resistor	97 milliamperes
B battery, Maico B-941	33	1.3 milliamperes

ACOUSTICAL GAIN

All measurements were made with the A battery resistor in the circuit. The acoustical gains at various frequencies are:

	128	256	512-3,072	4,096
Full volume	Nil	?	36-33	14 decibels

The instrument has a single volume control. Tests confirmed the manufacturer's claims to a reasonable degree for automatic volume control, allowing for a full volume setting of the instrument without excessive amplification of loud sound. The internal noise level is low, and the instrument is electrically stable and, with a reasonably well fitted earpiece, is free from acoustical feedback when turned up to full volume. The screw adjustment on the back of the instrument was supplied with only screw number 3 in, and all tests were made with this adjustment. There are two types of instruments, so-called "one dot" and "two dot."

ARTICULATION TESTS

The usual syllable and sentence lists were used with hard of hearing subjects at a distance of 5 feet and showed satisfactory performance.

The instrument is well made. Cords are reinforced with neoprene casings at connections, and mechanical details are well designed. The manufacturer states that a battery adapter can be supplied to allow the use of a large number of makes and types of batteries.

The Council voted to accept the Maico Hearing Aid, Model 42, for inclusion on its list of accepted devices.

ACOUSTICON, MODEL A-55, ACCEPTABLE

Manufacturer: Dictograph Sales Corporation, 580 Fifth Avenue, New York.

The Acousticon Model A-55, a vacuum tube hearing aid, was examined by the Council on Physical Therapy. Following are the results of that investigation:

The instrument was found to consist of a combined microphone and amplifier unit in a molded case, 3¼ inches by 2¼ inches by ¾ inch, weight, 3⁹⁄₁₀ ounces, air receiver ⅞ inch diameter, ½ inch thick, and bone receiver. The battery unit is 3⅝ inches by 3⅜ inches by 1¼ inches, weight 11⁸⁄₁₀ ounces.

BATTERIES

Voltages and current drains, with instrument turned full on, were:

A Battery, Acousticon No. 30...	1.5 volts		80 milliamperes
B Battery, Acousticon No. 51...	30 volts	1.4 to 1.8	80 milliamperes
C Bias	3.0 volts		

ACOUSTICAL GAIN

The instrument has a single volume control and a screw adjustment on the back of the case. Three positions of the latter are indicated by the letters L, M and H. So far as could be ascertained without extensive response measurements, the effect of turning this screw from the H to the L position was to increase the low frequency amplification without materially affecting the high frequency gain. There was only slight difference between the M and L settings at the frequencies at which amplification measurements were made. The internal noise level was low, and the instrument was not unduly sensitive to mechanical shocks. With a well fitting earpiece the volume control could be turned full on without acoustical feedback. The order of magnitude of the acoustical gains were:

Screw Setting	128	256	512-2,048	3,072	4,096
H	Nil	?	25-41	43	15.5 decibels
M	Nil	19	30-45	45	16.0 decibels
L	Nil	16	25-41	36	19.0 decibels

Whispered voice was understood at a distance of 5 feet by a hard of hearing subject with an average hearing loss of 45 decibels in the speech range.

ARTICULATION TESTS

The usual articulation test with hard of hearing subjects using both the bone and air receivers showed satisfactory performance.

The Council voted to accept the Acousticon, Model A-55, for inclusion in its list of accepted devices.

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SATURDAY, NOVEMBER 14, 1942

THE PEPPER HEARINGS ON MEDICAL MANPOWER

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians, established as a part of the War Manpower Commission, is carrying on a scientific, carefully considered allocation of physicians, dentists and veterinarians to meet the needs of the armed forces, industry and the civilian population, as directed by the President of the United States in his order establishing this body. Nevertheless, a small group of individuals, including a few physicians, apparently dissatisfied with actions of the Procurement and Assignment Service in some instances, was mustered to appear before a subcommittee of the Committee on Education and Labor of the United States Senate for hearings now being held in Washington. The American Medical Association was represented only on its own request. Obviously the American press has not been able to reflect fully the various facets of what some newspaper men have described as a "one man inquisition" conducted by Senator Pepper. THE JOURNAL hopes in future issues to print a rather full account of the hearings. Physicians may then judge for themselves the nature of the inquiry and the end apparently sought.

One of the chief facets thus far obvious is the desire of some industrial leaders and of the full time staffs of physicians which they employ to maintain their individual empires without disturbance regardless of the needs of the armed forces for physicians. They believe apparently that individual physicians should be taken by the armed forces before clinics, private hospital staffs, industrial organizations or similar groups are in any way disturbed. The first objective of the nation is the winning of the war. The armed forces require preferably physicians under 40 years of age. The decision as to who is physically fit or unfit for military service and as to who is "essential" or "not essential" cannot be left to the opinion of the individual physician himself or to the organization which employs him.

The statements of Dr. Frank H. Lahey, chairman of the board, and of Dr. Max E. Lapham, director of the Procurement and Assignment Service, placed clearly before the Pepper "inquisition" the facts regarding the number of physicians in the United States, their availability for various types of service, the procedures that are being followed in protecting industry and civilian communities against a shortage of medical manpower, and the absolute impartiality with which the affairs of the Procurement and Assignment Service are being administered. Some witnesses tried to force the concept that the personnel of the Procurement and Assignment Service with all its widespread organization throughout the nation, including the corps area boards and the state and county officials, all of whom contribute their services without remuneration, are creatures of the officials of the American Medical Association. Some representatives were charged with utilizing their positions to interfere seriously with the orderly functioning of American medical practice and indeed to injure the public health. The concept is itself as false as many of the other insinuations that were made by some of those who testified. This will be clear to every physician who studies this testimony when it is printed.

Prime movers in this assault on the Procurement and Assignment Service and perhaps also on the War Manpower Commission, of which it is a part, are, as will be obvious from the testimony, Paul de Kruif, Ph.D., Michael M. Davis, Ph.D., Mr. Henry J. Kaiser, eminent industrialist, the head of his medical services, Dr. Sidney Garfield, and two physicians who are said to have been heard in executive sessions of the committee and whose names are thus far not available. Accompanying Senator Pepper in his conduct of the "inquisition" are two economists, most of whose questions, as will also be clear in the published testimony, are directed toward establishing the view that American medicine has failed to meet its obligations in the war effort and that some agency must be established with totalitarian control over all medical facilities.

In his testimony before the hearings Dr. Thomas Parran of the U. S. Public Health Service spoke strongly in behalf of the services being given by the medical profession in this time of the nation's need and stated without the slightest equivocation:

SENATOR PEPPER: Do you think that allocation of medical personnel between military services and civilian work should have been handled through the Public Health Service rather than through the Procurement and Assignment Service?

DR. PARRAN: I think the present arrangement is the best. As a matter of fact, after seeing the system as it was set up in Great Britain eighteen months ago, I discussed that system with the Health and Medical Committee and others and

perhaps was responsible to some extent for a separate group representing the medical and dental professions being set up to deal with this problem.

Nevertheless, "Ph.D.s" de Kruif and Davis do not hesitate to endeavor to force on the U. S. Public Health Service a responsibility which the Surgeon General of that service certainly does not seek and which is opposed to his own statement based on serious study and established knowledge, that he considers the present method "best."

Already evidence has been submitted that the services established by Mr. Henry J. Kaiser, under the direction of Dr. Sidney Garfield, are endeavoring to hold from the armed forces even the opportunity to determine for themselves whether or not the considerable number of young men employed on salaries by this industrial organization are fit and available for military service. Certainly the decision as to whether or not these young men may best serve the nation in time of war in the armed forces or in the civilian capacities which they now occupy cannot be left to their employers. The final responsibility does not rest on the Procurement and Assignment Service, which can only indicate its belief as to whether or not such men are essential. The decision rests—and wisely—with the local boards in the areas concerned; these boards may give consideration to the recommendations made by the Procurement and Assignment Service. From the decisions of the local Selective Service boards appeal may be made, according to conditions established by our government, even as high as the national agencies in Washington or the President himself. Every young physician in the United States under 40 years of age should now determine in his own heart and in the light of the principles of public service traditional in medicine, whether or not he is doing his utmost to serve the nation in this time of emergency.

When the transcript of the hearings is published in forthcoming issues of THE JOURNAL, readers may determine the extent to which the hearings conducted by Senator Claude Pepper of Florida represent a courteous effort on the part of a public official to determine the facts, so that representatives of the people may legislate wisely to meet the needs of the hour, or whether or not a public agency, namely a senatorial hearing, is being used—or abused—under the leadership of a senator, to pillory a profession. Already that profession has contributed to the armed forces more than forty thousand physicians, the very best that the nation can supply. The remainder are working without thought of hours, of exposure, of fatigue or of recompense to maintain medical service for the American people in this time of trial. The performance displayed in Senator Pepper's hearings is not likely to improve the morale of American medicine at the very time when it should be at its highest in the service of the war effort.

PRONENESS TO ACCIDENT

Recent studies made by the Industrial Health Research Board of the Medical Research Council of Great Britain [1] add further convincing evidence that some individuals in a working group are more liable to accidents than others in the same circumstances; they may be designated as "accident prone." Various general conditions of work and environment have been recognized as contributory causative factors affecting the incidence of accidents, such as hours, speed and type of work, experience, age and fitness of workers, heating, ventilation, lighting and other working conditions, and attitudes of workers and management. In addition to these general factors it is evident that an important specific factor of "accident proneness" may be present in certain individuals. Such persons apparently have a special liability to be the subject of accidents just as some are particularly susceptible to certain diseases. Not only may a small percentage of a working group show a high percentage of the total sickness disability in the entire group; it has been found that as little as 10 per cent of a group may be responsible for as much as 75 per cent of the accidents occurring among them.

Accident proneness may be an innate characteristic of some people and a personal phenomenon independent of any question of responsibility, conscious action or blameworthiness. Those who sustain an undue number of one kind of accident also sustain an undue number of other kinds. Accident proneness is a relatively stable quality obeying fairly definite laws. Moreover, those who are most often ill tend, on the whole, most often to have accidents, indicating that the prevention of accidents may depend to a considerable degree on the prevention of sickness and emphasizing further the need for greater attention to the industrial health program as a whole.

According to the British studies, accident proneness may be measured to a certain extent by tests involving rapid and accurate coordination of hand and eye and by linguistic intelligence and mechanical aptitude tests. Admittedly, all such tests are as yet in the experimental stage and their validity at present appears much greater among skilled workers than in unskilled occupations. A second suggested method of predicting the "accident prone" is by determining the number of accidents sustained by each individual in a working group during

1. Industrial Health Research Board: Emergency Report No. 3, The Personal Factor in Accidents, Sept. 3, 1942, London, H. M. Stationery Office.

a previous period of exposure. This method has certain disadvantages, particularly from the points of view of the delay in time or waiting period involved and the present inadequacy of accident records as a whole. The latter fact emphasizes the great need for better records of accidents. A combination of these methods of testing probably is the most effective way of using our knowledge of accident proneness to reduce the incidence of accidents.

As indicated in the British report, there is no question of not employing those who are accident prone. They are fairly normal persons and can be usefully engaged in most occupations. It is only if they are employed in an occupation with a high accident liability that they are a danger to themselves and to others. Bristol [2] has indicated that, while it appears reasonable that a person should be removed from a position in which he is a potential danger to himself and others, industries which realize their obligations to society in general undoubtedly will be slow to penalize an individual because, through no fault of his own, his mental and physical qualities are not equivalent to those of fellow employees. The chief objective should be to see that these accident prone individuals are identified through medical and other examinations and are assigned to work in which the severity and danger of their potential accidents are reduced to a minimum.

Current Comment

AMERICAN ATABRINE

The most prevalent disease afflicting the populations of the world is undoubtedly malaria. How many cases occur each year is not known, but estimates place the number as high as 800,000,000. In local areas, particularly in the United States and Panama, drainage and sanitary engineering projects have had some influence on the incidence of malaria, but such measures cannot cope with the disease on a worldwide basis. Until 1932 the populations of the world were principally dependent on quinine and its derivatives for protection against the malady. With the discovery of Atabrine in 1932 a new and potent addition to the antimalarial armamentarium made its appearance. When the Netherland East Indies fell to Japan, the source of practically the entire world supply of quinine was lost to the United Nations. Atabrine, now officially recognized under the nonproprietary name quinacrine, assumed a role of unsurpassed importance as a strategic drug. Although it was originally prepared in this country from imported intermediates, in 1941 American chemists solved the problem of synthesizing the drug through intricate steps. The question has been raised whether the American Atabrine is identical in all respects with the German drug. This question was studied as a war project by the Division of Chemistry and Chemical Technology of the National Research Council. Extensive chemical, pharmacologic and clinical investigations were made in leading institutions throughout the country. The report released by the National Research Council establishes the fact that there is no longer reason to doubt that the drug manufactured in this country is genuine, comparable in every respect with that produced in other countries.

2. Bristol, L. D.: Medical Aspects of Accident Control, J. A. M. A. **107**: 653 (Aug. 29) 1936.

"ETHYLENE DISULPHONATE" LAUNCHED AS A CURE FOR ASTHMA

Inquiries concerning a "new" treatment for asthma which employs injections of "ethylene disulphonate" appear to have been stimulated recently by publicity in *Newsweek* for October 12 and by the United Press in various newspapers. A paper given by Dr. Norman M. Smith of Minneapolis at the Mississippi Valley Medical Society meeting in Quincy, Ill., was the basis for the publicity. "Ethylene disulphonate" was originally promoted under the name Allergosil by the Spicer-Gerhart Company of Sunland, Calif. Back of this company is one Edward H. Spicer, who some years ago was actively connected with a product called Edwenil. Allergosil is not available for interstate distribution but "for investigational use only" under the provisions of the Food, Drug and Cosmetic Act of 1938 controlling the release of new remedies. Request from outside California, addressed to the Spicer-Gerhart Company, indicates that this preparation, which is described as a 1.10^{-15} dilution of "ethylene disulphonate," can be obtained for investigational purposes at a cost to the profession of $13.50 per single 2 cc. dose. Here is another example of hasty and inadvised publicity based on scanty scientific evidence and questionable promotional practice.

HEALTH SUPPLEMENTS

Many newspapers have during recent years published supplements on health. A special supplement recently prepared by the Public Relations Committee of the Philadelphia County Medical Society for the Philadelphia *Record* of October 27 deals with the "Care of Health and First Aid in Pictures." This supplement of twenty pages shows in a series of strips most of the procedures now recognized as competent in first aid, also some excellent pages on nutrition, care of the teeth, the common cold, safety first and industrial efficiency. The leading industries of Philadelphia cooperated in paying for space, and all of the companies which have industrial medical departments approved by recognized agencies aided in the publication. They went on record as favoring examination of the individual previous to employment, proper guards on machinery, proper control of plant environment, and a physician in charge of the medical department with proper personnel and equipment to give attention to all injuries or illnesses. The Public Relations Committee of the Philadelphia County Medical Society rendered a great service to the people of Philadelphia in aiding in the production, authentication and publication of this supplement.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

ARMY

THE PRESENT ROLE OF THE ANESTHESIOLOGIST IN THE ARMY

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The anesthesiologist has played a significant part in the history of military surgery. Always mindful of his prime obligation to his patient and his surgeon, he was hindered in his early development by the scarcity of recognized anesthetic agents and technics and by the appalling lack of basic principles to guide his clinical judgment. What recognition he did receive expressed, in small measure, the growing need and respect for his services. The nineteenth century with its American Civil War [1] and various British colonial campaigns [2] saw the wave of enthusiasm for chloroform inhalation anesthesia. The opening of the present century marked the increasing popularity of ether [3] and the introduction of spinal subdural technics.[4] During World War I there appeared, in addition, the use of local infiltration anesthesia [5] and nitrous oxide-oxygen [6] and ethyl chloride inhalation anesthesia. Other developments of military anesthesia have been reviewed in more detail in a recent publication.[7] Although the anesthetist had become of greater service to his medical unit in World War I, the rank of an officer was not officially authorized. This was rightfully so, for anesthesiology was still in its infancy. It was apparently felt that knowledge of a few technics could hardly justify the respect of a medical specialist in the armed forces.

The aftermath of the last war, however, brought to light the fruitful experiences of military anesthetists. Perhaps the most significant of these was the teaching outline of "signs of anesthesia" published by Guedel.[8] This contribution can truthfully be regarded as the first significant attempt to emphasize and evaluate the changing physiology of an anesthetized patient. Flagg,[9] Gwathmey [10] and others tried to popularize various procedures used by them while in the Army. Waters introduced the clinical use of the carbon dioxide absorption technic [11] and cyclopropane anesthesia.[12] Meanwhile, other anesthetists reported their gratifying results with intravenous anesthesia,[13] regional anesthesia,[14] and significant modifications of spinal anesthesia.[15]

Rapid advances, both in the clinic and in the laboratory, served to establish anesthesiology as a science and medical specialty. Universities [16] and other civilian institutions [17] incorporated anesthesiology in their organization as a separate department. Recognition by the American Medical Association [18] paved the way for the formation of the American Board of Anesthesiology, with its powers to certify specialists. A few years ago a special section [19] for anesthesia and operating pavilion was created in the organization of the surgical service of an army general or station hospital. Today, at long last and only after anesthesiology has been recognized wholeheartedly by official civilian and military medical groups, the trained anesthetist in the armed forces has been given the status of an officer. As such, the anesthesiologist is in charge of the Section on Anesthesia and Operating Pavilion.

FUNCTIONS PERFORMED

The present anesthesiologist in army general hospitals has fully justified his indispensable position. His duties are numerous and available twenty-four hours a day and encompass not only anesthesia but also supervision of the operating pavilion. Broadly speaking, his prime function is to schedule, coordinate and facilitate the operative procedures of the various surgical

Read before the New England Society of Anesthesiology, Boston, Oct. 13, 1942.

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

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17. Council on Medical Education and Hospitals, J. A. M. A. **111:** 2213 (Dec. 10) 1938.
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19. Walson, Charles M.: Station Hospital Organization, Army M. Bull. 54, October 1940, p. 3.

sections. His staff may consist of assigned medical or nurse officers or enlisted men. The physical setup of his ward is apportioned for operating theaters, offices and various rooms for autoclaving, utility work, anesthesia supplies, linen storage, toilet and showers. General and specific policies, integrating the activities of his section with those of other sections as well as with departments of medicine, pharmacy and laboratory, must be formulated and incorporated in the hospital regulations [20] during the organization period of the

Outline of Functions of the Present Day Army Anesthesiologist

I. *Administrative Duties*
- A. Supervision of personnel:
  1. Medical officers
  2. Nurse officers
  3. Enlisted men
  4. Civil service employees
- B. Supplies and equipment:
  1. Standard and nonstandard
- C. Inventory monthly
- D. Repair and construction
- E. Reports:
  1. Monthly
  2. Annual
  3. Efficiency
  4. Investigative
- F. Committee meetings

II. *Professional Duties*
- A. Operative schedules, major and minor surgery
- B. Sterilization and autoclaving of equipment:
  1. For operating pavilion
  2. For surgical and medical wards
- C. Anesthesia proper:
  1. Administration or supervision of:
     (*a*) Clinical anesthesia of patients
     (*b*) Preoperative and postoperative rounds
     (*c*) Treatment of complications
  2. Didactic instruction of personnel:
     (*a*) Lectures to surgical staff
     (*b*) Formal course in anesthesiology with practical training
  3. Clinical problems and research studies
- D. Inhalation therapy:
  1. Oxygen
  2. Carbon dioxide
  3. Helium
  4. Helium and oxygen
- E. Fluid therapy:
  1. Isotonic solution of sodium chloride
  2. Dextrose solution
  3. Saline and dextrose solution
  4. Blood plasma:
     (*a*) Dried preparation
     (*b*) Liquid plasma
  5. Whole blood

III. *Miscellaneous Duties*
- A. Part time or temporary assignments:
  1. Surgical wards
  2. Various hospital boards
  3. Basic field drill
  4. Other nonmedical duties
- B. Duties in units smaller than a general hospital depend on:
  1. Type of hospital
  2. Size
  3. Location
  4. Personnel

hospital. As a part of the surgical department, he is responsible directly to the chief of the surgical service.

The accompanying tabulation outlines the duties of the present day recognized military anesthesiologist, more particularly those of a chief of Section of Anesthesia in a named general hospital of the Army. These will vary in scope somewhat in smaller medical units according to the type of hospital (station, evacuation, and so on) as well as its location and personnel.

Experience has borne out the fact that the functions of the anesthesiologist require the delicate, prompt and tactful integration of (1) administrative, (2) professional and (3) miscellaneous duties. Among the many administrative activities may be listed those referable to personnel, supplies, inventory, repair and construction, reports and committee meetings. Personnel, consisting of duty and Medical Department Replacement Pool (MDRP) officers, nurses, enlisted men and civilians, must be trained and supervised until optimum proficiency is obtained. Aside from a few "key" individuals, members of the section trained in anesthesia or surgical technics must be made available for transfer to combat units or to serve as a nucleus for another training center. In short, one has an evanescent staff with an endless number of students.

Standard supplies must always be on hand in adequate amounts and not in excess. In the past, certain items of a nonstandard nature have been requisitioned to facilitate various surgical specialties. The section chief is personally responsible for all furniture, surgical and anesthetic equipment issued to him by the medical supply officer. This often exceeds a financial responsibility of $100,000. Hence, care in the proper use of the equipment must be emphasized and defective instruments must be repaired or returned for salvage. Experience has taught that personal supervision of the monthly inventory of equipment is the only safe and certain procedure to detect shortages and/or excesses. Repair of furniture, walls and halls, the construction of racks, cabinets and shelves or the installation of new equipment must be personally attended to and checked to avoid errors, delays and confusion. Monthly and annual reports are made out in detail to summarize the work of the section for the chief of the surgical service.

Efficiency reports of each member of the staff are often called for, particularly of MDRP officers. Occasionally, statements are requested for special investigations or to help evaluate or condemn unsatisfactory batches of commercially prepared drugs. From time to time it becomes the administrative duty of the section chief to attend certain closed interdepartmental staff meetings for consultation, organization or training purposes. On the whole, the administrative duties of the section chief of anesthesia are numerous, time consuming and quite different from those of the average civilian anesthetist.

Surprising to many, the professional duties of a military chief anesthetist are even more diversified than his administrative ones. He prepares or supervises the preparation of daily operative schedules of all major and minor surgery. Certain days and operating rooms are set aside for the various surgical procedures and specialties. About 3 p. m. of the day preceding, the ward officers hand in their individual surgical schedules, which are arranged into final form for the next day's work. The operating pavilion with its rotating staff is made available for any emergency twenty-four hours a day. Aside from preparing surgical schedules, it is the duty of the section chief to arrange for the sterilization or autoclaving of all surgical equipment and linen coming from surgical and medical wards as well as from the operating pavilion. This is a tremendous job and of a highly responsible and technical nature. Admittedly the details of this task are foreign to the average anesthetist, and hence they are commonly relegated, in large measure, to an adequately trained dependable nurse. However, although she may supervise such work and train enlisted men to aid her, the full responsibilities of her duties rest on the shoulders of the section chief.

Referable to anesthesia, per se, the duties of the military anesthetist in an army general hospital are

20. Hospital Regulations, Tilton General Hospital, Fort Dix, New Jersey, 1941.

essentially similar to those in civilian institutions. He administers recognized anesthetic agents such as ether, nitrous oxide, vinethene, cyclopropane [21] and sodium pentothal and also uses the accepted inhalation, spinal, intravenous and block technics. In addition, he supervises the clinical anesthesia done by his staff, their preoperative and postoperative rounds and the recognition and treatment of postanesthetic respiratory and circulatory complications. He is often called on to discuss case presentations before the hospital staff or deliver lectures to them of general interest. Formal instruction, however, in the nature of an intensive course in anesthesiology [22] is confined to selected duty and MDRP officers, enlisted men and occasionally a nurse. Clinical anesthetic problems of military nature have presented themselves from time to time and have stimulated research. Although their study has been pursued, their completion has been admittedly slow and difficult.

The military anesthetist in some hospital units is in charge of all inhalation [23] and fluid therapy. While such an added task can be burdensome, its rightful and centralized control by an anesthetist has its academic and practical virtues. Such a procedure is not unlike that followed in civilian hospitals and at Tilton General Hospital has thus far proved to be valuable in the proper safeguard of the welfare of our patients. It has been the duty of the anesthetist to administer or supervise the administration of oxygen, carbon dioxide or helium therapy of surgical, medical or dental patients. Whole blood transfusions as well as the actual preparation of isotonic solution of sodium chloride with or without dextrose are also supervised by the section chief of anesthesia. Dried and liquid plasma and commercially prepared isotonic solution of sodium chloride are dispensed by the anesthetists only on request of the ward officers.

The functions of a military anesthetist are not limited to administrative and professional duties alone. In hospitals where officer personnel is inadequate in number and/or in proper training the anesthetist may be and has been called on to assume miscellaneous duties. This may include those of a section chief of physical therapy, an assistant surgical ward officer or a member of various boards. At different times of the year he must attend classes for basic training in the lecture room or out on the drill field. He may be assigned to other nonmedical duties. This has been true particularly in evacuation and other smaller hospital units where the surgical activity, in amount and variety, may be dormant for variable periods of time. To be sure, his life is never dull but is profitably and well occupied.

COMMENT

The role of the anesthesiologist in the Army at the present time is admittedly significant and far more different from that of military medical units of World War I or of modern civilian hospitals. Whereas in the past he was merely a technician, or noncommissioned officer at best and without much responsibility, he is now significantly in control of the operating pavilion or what may be regarded logically as the center of activity of the surgical service.

While the administrative, professional and miscellaneous duties of the military anesthetist are admittedly numerous as compared to civilian anesthesiologists, his responsibilities do not end here. To facilitate all his duties, he has a major problem of "paper work" to reckon with. In accordance with Army Regulations, this phase of his work cannot be slighted and receives no less attention than his dutiful regard for anesthesia records. In addition it must always be remembered that the section chief of anesthesia now is an officer, a cherished position governed by army tradition and subject to regulations applying to officers of all arms and services.

The crying need for military anesthetists is occasioned not solely by the relatively small number reporting for active duty but particularly by the growing appreciation of the service they can provide to safeguard the welfare of patients. The Army is cognizant of the value of their academic and clinical background and is becoming "anesthesia conscious." It now remains for anesthesiologists to nurture and maintain this most wholesome and recent recognition by affording the safest and most adequate anesthesia to military patients. This should be regarded by anesthesiologists still in civilian clothes not as an invitation but as a challenge to do their share for their specialty and particularly the armed forces.

SUMMARY

The anesthesiologist in the Army has earned his status of an officer. His many and diversified duties, as compared to those of a civilian anesthetist, have made him indispensable to the proper functioning of army hospitals. It remains for the future to determine the rationale of the confidence the Army has put in the present day anesthesiologist.

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CHEMICAL WARFARE SERVICE

The new commandant of the Chemical Warfare School at Edgewood Arsenal, Maryland, is Brig. Gen. Alexander Wilson, formerly chief of the Field Division of the Office of the Chief of Chemical Warfare Service. Col. Patrick F. Powers has been appointed to succeed Col. Harry A. Kuhn as chief of the New York Chemical Warfare Procurement District. Colonel Kuhn has been made chief of the Control Branch of the Office of the Chief of Chemical Warfare Service in Washington. Col. Adrian St. John, who recently received the award of the Purple Heart for heroism in Burma, has reported for duty in the office of the chief. At the invitation of the government of Mexico, officers from the Civilian Protection School at Texas A. & M. College recently went to Monterey, Mexico, to give instructions and demonstrations in chemical warfare under the direction of Lieut. Col. Harold R. Brayton. One thousand persons took the special course of instruction, and many more thousands witnessed the chemical warfare demonstrations.

ARMY MEDICAL PERSONALS

Col. Harry R. Berry has assumed duty as hospital inspector at Letterman General Hospital, San Francisco, and Lieut. Col. Harold I. Amory, chief of the radiologic service at Letterman General Hospital, has been ordered to new and undisclosed duties.——Lieut. Col. Francis M. B. Schramm has assumed command of the station hospital at Camp Pickett, Virginia, succeeding Col. Frank T. Hallam.——Majors Carson F. Hunt, Arthur F. Dorner, Millard E. Gump and Capt. Donald D. Meyer have been ordered to Luke Field, Arizona.

NAVY

DR. IVY TO DIRECT NAVY RESEARCH INSTITUTE

The new Naval Medical Research Institute at Bethesda, Md., was placed in commission on October 27. Among those attending the ceremonies were Rear Adm. Ross T. McIntire, surgeon general of the navy, and Rear Adm. Harold W. Smith, chief of the Division of Research. The institute will be concerned chiefly with the physical and mental conditions of aviators, submarine crewmen and marines. The scientific director of the new medical unit is Dr. A. C. Ivy, professor of physiology, Northwestern University Medical School, Chicago, who is now on leave of absence from the university; the officer in command is Capt. William L. Mann. The new institute is a component part of the Naval Center at Bethesda, which includes also the Naval Medical School, the hospital and the dental school.

NAVY DENTAL OFFICERS ORDERED TO MAYO FOUNDATION

The following six U. S. naval dental officers have been ordered to the Mayo Foundation, Rochester, Minn., to pursue a postgraduate course in instruction in maxillofacial surgery: Lieut. Comdrs. L. P. Mitchell Jr. and Wilbur N. Van Zile, Lieut. Stephen F. Jensen and Lieuts. (j. g.) Alexander D. Bunn, John W. Pepper Jr. and Charles R. Shea. All these officers except Lieutenant Jensen are members of the regular navy.

The special course was instituted through the cooperation of the Mayo Foundation and the Navy Bureau of Medicine and Surgery. Three additional groups of officers will pursue the course during the winter.

PUBLIC HEALTH SERVICE

DR. WILE COMMISSIONED IN PUBLIC HEALTH SERVICE

Dr. Udo J. Wile, professor of dermatology and syphilology in the University of Michigan School of Medicine, has been commissioned medical director (R.) in the U. S. Public Health Service for active duty with the Division of Venereal Disease Control. Dr. Wile will conduct a study of all new methods described in recent years by various clinicians for the intensive treatment of syphilis. He will also supervise the quarantine hospitals which the Public Health Service and the states are developing in critical war areas. These hospitals are for the treatment of prostitutes and recalcitrant persons who are infected with syphilis and who are capable of spreading the disease. The hospitals will be staffed by physicians, nurses and record analysts of the Public Health Service, who will be given special training in rapid therapy under the supervision of Dr. Wile. The first training course will begin in November, with headquarters at Ann Arbor. Some twenty physicians, sixty nurses and twenty record analysts are expected to report for training in the first class.

CIVILIAN DEFENSE

MEDICAL CARE FOR WIVES AND INFANTS OF MEN IN MILITARY SERVICE

The Office for Emergency Management, Office of Defense Health and Welfare Services, has issued Family Security Circular No. 27, which contains excerpts from a memorandum to state health agencies from the U. S. Children's Bureau to the effect that state health agencies may provide medical and hospital obstetric and pediatric care for the wives and children of men in military service under instructions issued by the U. S. Children's Bureau, which has set aside for this purpose 10 per cent of its Maternal and Child Health fund-B appropriation for the fiscal year 1943, amounting to $198,000.

A maximum amount of $10,000 can be allotted to any one state at this time from the fund reserved for this purpose.

Funds will be granted to states only for expenditures in accordance with a plan formally submitted by the state agency and approved by the Children's Bureau.

GUIDING PRINCIPLES

Among the principles suggested as a guide to the development of plans by a state agency are the following:

Eligibility.—All expectant mothers in the state who report that the father of the expected child is in military service and not a commissioned officer, and any child under 1 year of age whose father is in military service, but not a commissioned officer, should be eligible for obstetric medical and hospital services provided under the Maternal and Child Health program, without cost to the family, whenever to the knowledge of the state health agency such medical and hospital services are not otherwise readily available to the patient.

Standards of Medical Care.—Medical care provided under the plan should be authorized by the state health agency only when the attending physician is licensed to practice in the state and is a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. Antepartum care should be of a quality comparable to that recommended in the Children's Bureau publication "Standards of Prenatal Care." Obstetricians and pediatricians who are certified by the American specialty boards, or whose training and experience meet the requirements of such boards, should be appointed consultants by the state health departments and, whenever possible, be made available for consultation with the general practitioners participating in the plan.

Standards of Hospital Care.—Hospital care should be authorized only in hospitals that either have been approved by the American College of Surgeons or have been inspected and approved by the state health agency as meeting the standards of an obstetric and pediatric service established by the state health agency. A minimum of ten days' hospital care after delivery should be authorized.

CIVILIAN DEFENSE STAFF MEMBERS AND FIRST AID TRAINING

James M. Landis, director of the Office of Civilian Defense, announced on November 5 the removal of the requirement that members of staff units of the Citizens Defense Corps have ten hours of first aid training, as staff unit members would be employed in the headquarters of the Defense Corps rather than at the scene of air raid emergencies. Air raid wardens, auxiliary police and auxiliary firemen, decontamination squads, messengers and members of the drivers corps each are still required to have at least ten hours of first aid training. The nurses' aides are required to take the regular first aid instruction in addition to the nurses' aide course of eighty hours special American Red Cross training given in connection with approved hospitals. The medical corps, a professional group, has special training as directed by the Office of Civilian Defense Emergency Medical Division. About 175,000 persons have registered for duty with staff units of the Citizens Defense Corps and have taken first aid training similar to that of the wardens and other corps units.

CIVILIAN DEFENSE APPOINTMENT

Dr. Mark V. Ziegler, Chicago, recently resigned as director of district number 3 of the U. S. Public Health Service to become regional medical director of the Office of Civilian Defense in Baltimore.

MISCELLANEOUS

HOW TO CONSERVE MEDICAL AND SURGICAL RUBBER GOODS

Of all the materials which must be conserved to the utmost, rubber is probably most important. By far the biggest "source" of rubber will be the saving of citizens of this country which can be accomplished by taking proper care of the rubber goods they now have. It is possible to extend the life of rubber goods as much as 50 per cent by observing a few simple principles.

SOME GENERAL PRINCIPLES

The greatest enemies to the long life of rubber are sunlight, heat, oils, greases and solvents. To preserve rubber goods the following general rules should be observed:

1. Clean and dry rubber goods thoroughly before storage.
2. Store in a cool, dark and dry room, away from sources of heat. (New goods should be kept in their boxes.)
3. Lay rubber articles flat when storing, allowing them to assume their natural position. Rubber under a permanent strain loses its life and will set up a deformation which may cause it to crack.
4. Wash with soap and water or alcohol as soon as possible after contact with oils, greases and solvents.
5. Handle rubber goods carefully and avoid puncturing with sharp instruments or the finger nails.

SURGEONS' RUBBER GLOVES

Insist that gloves be put on and removed carefully, and caution all wearers to avoid cutting or puncturing the glove while in use. When drawing on or removing a rubber glove, one should take care that the finger nails of the person holding the gloves do not tear into the rubber. Gloves should be rinsed in cold water after use and before removing them. Gloves should be washed and scrubbed with a brush, using soap and water, before sterilization. Care should be taken to see that all traces of soap are removed after washing. If gloves have been used in greasy or oily substances, they should be soaked for fifteen minutes in a good grade of commercial acetone. Gloves should be tested for leaks by filling them with water under slight tension rather than under air pressure. After gloves are powdered evenly on both sides with talc, they should be allowed to dry away from any form of intense heat. It is particularly important that all air be removed from the sterilizer prior to the sterilization period. A very slight amount of air left in the sterilizer will result in extensive oxidation and deterioration of the rubber. A study made by the Bureau of Standards in 1937 showed a wide variation in the sterilizing methods in use in hospitals. In some instances excessive oxygen was present, causing rapid deterioration of rubber products. When sterilization is begun, the air in the sterilizing chamber should be displaced by steam as quickly and as completely as possible. In sterilizing the gloves, the period of exposure should be fifteen minutes at 250 F. The gloves should be removed immediately after the fifteen minute period. Timing the exposure should begin when the thermometer shows 240 F. in its advance toward the maximum of 250 F. A longer exposure period reduces the tensile strength and results in reduction in the useful life of the gloves. Several hospitals have reduced the number of gloves used per operation from an average of three or four to less than one simply by reducing the period of exposure in the sterilizer from thirty minutes to fifteen minutes. A rest of twelve hours after sterilization and before use is recommended to prolong the life of the glove and insure better service. Authorities on the proper methods of cleaning rubber gloves agree that chemical germicides and disinfectants, including cresol compounds, should be avoided.

MOLDED RUBBER GOODS

The water used in a water bottle should in no case have a temperature higher than 140 F. Boiling water ages the rubber prematurely. A water bottle should be filled to two-thirds capacity with hot water. The bottle should then be squeezed to expel the air in the bottle and the stopper inserted. There should be no air in the bottle when in use. Punctures to water bottles would be greatly reduced if the bottles instead of being pinned in cloth before being applied to the patient's body were placed in a bag fitted with drawstrings. Ice for throat collars and ice caps should be chopped into fine pieces before and not after it is placed in the bag. The metal shutoff device on the tube of a syringe or enema bag should not be left clamped down. This will weaken the tubing at this point and frequently cause the two inside surfaces to stick together. The shutoff valve should be moved to different points on the tubing to prevent creating a permanent dent at any one point. After use, these items should be thoroughly drained and dried. If an antiseptic or other solution has been used, they should first be rinsed out with clean warm water. Before storing, they should be inflated so that the sides will not stick together.

SURGICAL TUBING

Clean and rinse rectal tubes thoroughly and then boil for two minutes. Stomach tubes should be rinsed and thoroughly cleaned and then soaked in a 5 per cent solution of cresol for one hour.

RUBBER SHEETING

Rubber sheeting should be washed with soap and warm water, thoroughly rinsed and then cleaned with a 5 per cent solution of cresol. When it is not being used, cover evenly with talc and roll on a tube. Do not fold, as this material has a tendency to deteriorate at the line of folding.

RUBBER FLOORING

Unpolished rubber floors or tile should be cleaned by brushing with a push broom and washing small sections of the floor at a time with a mild solution of washing soda or trisodium phosphate. The solution is made by dissolving about ¼ cup of the cleanser in 12 to 16 quarts of clear cold water. All traces of the cleaning solution should be removed by mopping the floor thoroughly with clear water. This process should be continued over the entire floor. A buffer should not be used for scrubbing. Brushing the floor often makes frequent cleaning unnecessary. When the floor has been dried and buffed, it may be waxed by applying a good quality water emulsion wax. Waxes used on rubber floors should be free of oil, fats and organic solvents.

RUBBER TIRES AND WHEELS

Avoid as far as possible running rubber tired equipment over greasy or oily floors. Some reclaimed rubber will be allowed for the replacement of rubber tires on certain types of essential hospital equipment. Any such allotment will, however, be made only for equipment used near patients' rooms or operating areas.

REPAIRING RUBBER GLOVES, WATER BOTTLES AND ICE PACKS

Because of the high quality rubber used in them, it is particularly necessary that rubber gloves be repaired where possible, and their life extended to a maximum. Cuts, tears and punctures, if not too large, can be repaired by applying a patch of thin sheet rubber with a general purpose rubber cement. The cuffs of discarded gloves can be used to make such patches, or thin rubber sheeting may be obtained for this purpose. It is desirable to have the patch extend about ½ inch about the damaged area. For very small holes or punctures not more than ¼ inch overlap is necessary. The patch will be less likely to be removed if the glove is turned so that the patch is applied on the inside. Gloves which have been properly patched with rubber cement will withstand sterilization satisfactorily. The directions given for patching rubber gloves will also apply to hot water bottles and ice packs.

A NONINJURIOUS SUBSTITUTE FOR GLYCERIN LUBRICATING JELLY

The shortage of glycerin and gums has made it increasingly difficult for doctors in hospitals to obtain adequate supplies of these materials for lubricating gloves, catheters and other surgical rubber products. Realizing this situation, the Canadian Hospital Council requested the Ontario College of Pharmacy to investigate and develop if possible a product which would not require either glycerin or gum and would be satisfactory to the profession. Such a product was developed by Mr. D. E. MacKenzie, assistant professor of pharmacy in the Ontario

College of Pharmacy. The method of preparing material was described in the July 1942 issue of the *Canadian Medical Association Journal*. The following is quoted from that article:

It was found that the following formula would meet these requirements:

Starch	7 ounces 135 grains
Distilled water	1 gallon
Sodium lactate (60 per cent)	90 fluidounces
Mercuric oxycyanide	280 grains

Dissolve the mercuric oxycyanide (B. P.) (sol. 18 W) in part of the distilled water, using the remainder of the water to form a smooth paste with the starch. Combine these two portions with the sodium lactate and heat in a steam kettle or some other device capable of supplying a temperature of approximately 100 C. The heating, with moderate agitation, is continued until a translucent jelly is formed, at which point the product can be at once transferred to suitable containers.

STERILIZATION

The product is best sterilized after it has been placed in containers and, following latest approved procedure, can be successfully rendered sterile by autoclaving at a steam pressure of 10 pounds (115 C., or 240 F.) for a period of thirty minutes.

CONTAINERS

Undoubtedly the collapsible tube is the most satisfactory package. Since tin has gone to war almost 100 per cent, and alloy tubes cannot be supplied in very large quantities, it might be advisable to standardize, for the time at least, on glass or porcelain jars. These jars could be large enough for only a single application or else packed in larger quantities and resterilized after usage. If jars are used, the tops may be conveniently covered by a triple thickness of cellophane, held in place with string or rubber bands and for added protection a further covering of parchment type paper. Autoclaving may be carried out quite effectively while the container is so wrapped.

PUBLIC HEALTH UNDER HITLER

Paris-Soir of September 16 reports that winter food conditions will be hard. The meat situation is paradoxical: there are too many animals and too little meat. The number of live stock has been reconstituted with astonishing rapidity since the war, but their market value is disconcerting. Thus, in some markets today a calf sells for less than a goose. Lack of forage due catastrophically to drought has increased slaughtering, but especially of thin animals. Instead of giving 300 to 350 Kg. of meat which can be preserved for one year in a refrigerator, an ox gives 250 Kg. of second class meat which can be preserved for only a few months. It was originally planned to place 30,000 tons of meat in refrigerators. Last year 24,000 tons was frozen, but this year one must be satisfied if 20,000 tons can be refrigerated. The production of pigs, of which France consumed 20,000 tons before the war, is at a last gasp owing to a shortage of pig food. Official prices are also unfavorable. A young pig costs 700 francs. Nevertheless it is hoped to maintain level meat rations this winter. Stocks of dried vegetables are almost exhausted. The prospects of the present crops are poor. This is the biggest question of the coming winter.

Ny Dag of September 16, dealing with the experiences of the shipwrecked crew of the mined Swedish vessel *Tynningoe* on its return from Gremany, states that their recollections of their stay in Germany are unpleasant. Not a piece of soap is obtainable, and the food is extremely bad. They saw, however, that Germans fared no better and that there is appalling want. Their general impression was that the Germans are longing intensely for peace, regardless of who wins. The British bombing raids over western Germany have a frightful effect. The seamen traveled through Rostock and Emden, where all important building seemed destroyed.

According to the *Frankfurter Zeitung* of September 11, in order to recover the celluloid from many millions of old toothbrushes, firms in the toothbrush industry will in future require that the purchase of new toothbrushes be made conditional on the return of the old ones.

In the *Helsingin Sanomat* of September 14 a correspondent writes: The question of the saccharin shortage was discussed in the press last summer, when we were assured that the supply would shortly improve, but so far there is no sign of saccharin on the market. We were told in shops that it had all gone to the "foreigners." We were also told that it has become quite impossible to obtain this commodity from abroad. What is the real truth about saccharin?

According to *Magyar Sztatisztikai Szemle*, August, Dr. Sandor Mozolovszky, dealing with industrial accidents, reports that during 1941 there were 3,224 fatal accidents and over 30,000 minor ones. The number of working hours thus lost has not been published. Judging from personal experience, these may be estimated without exaggeration at 677,040. If the loss of one day's work is estimated at 5 pengös the total loss suffered would amount to 3,385,200 pengös.

According to DNB of August 26, the fuehrer has issued the following decree on the medical and health services:

"The employment of the personnel and the material in the medical and health services must be controlled in a uniform manner and according to a preconceived plan. I therefore order as follows:

"1. In the sphere of the armed forces I commission the inspector of the medical service of the army, in his capacity of chief of the medical service of the armed forces, to correlate all joint tasks in the sphere of the medical services of the armed forces, the Waffen-SS and the organization and units under the command of or attached to the armed forces, at the same time retaining the duties which he has discharged hitherto.

"The chief of the medical service of the armed forces represents the armed forces in all matters common to the medical services of the different services, the Waffen-SS and the organizations and units under the command of or attached to the armed forces, with all other authorities and looks after the interests of the armed forces with regard to the hygienic measure taken by the civil administration.

"For dealing comprehensively with these tasks one medical officer each from the navy and the luftwaffe shall be attached to him, the latter in the capacity of chief of staff. Questions of principle concerning the medical service of the Waffen-SS must be settled in agreement with the medical inspectorate of the Waffen-SS.

"2. In the sphere of the civilian health service, the secretary of state in the reich ministry of the interior and reich health leader, Dr. Conti, is responsible for all uniform measures. For this purpose the departments concerned of the supreme reich authorities and their subordinate authorities are at his disposal.

"3. For special tasks and negotiations in order to balance the requirements of (doctors, hospitals), medicines and so on between the military and the civilian sectors of the medical and health organization, I confer full powers on Prof. Dr. Med. Karl Brandt, who is responsible to me personally and takes his orders from me.

"4. My Delegate for the Medical and Health Organization must be kept informed of any events of fundamental importance both in the medical service of the armed forces and in the civilian health service. He is authorized to take action on his own responsibility.

"Signed by the fuehrer, by Keitel as chief of the OKW and by Lammers as head of the reich chancellery.

"Prof. Dr. Med. Brandt will have the title of 'Commissioner General of the Fuehrer for the Medical and Health Services.'"

Hrvatski Narod of August 29 reviews the work of the past year in Bosnia of the Institute for Diseases, which estimates that within two or three years it will be able entirely to suppress endemic syphilis in the country. During the past year more than sixty doctors have been working and over one hundred clinics operating; 365,980 persons have been treated, 295,345 injections given and 32 Kg. of arsphenamine and 244 Kg. of bismuth compounds used.

Zora of August 2 reports that a special train with 300 wounded German officers and men from the African front have arrived at Skoplje. They were in very high spirits.

According to the *Berliner Borsen-Zeitung* of August 9 the Bad Pyrmont, one of the largest and best known watering places of greater Germany, is today almost entirely at the service of the wehrmacht. It was certainly not an altogether pleasant surprise when immediately after the outbreak of war the greater part of all hotels, boarding houses and houses designed to receive private guests were commandeered by the wehrmacht. It meant adapting oneself to the new arrangement, which was not easy at first. The willingness and cooperation of the population and the authorities of Bad Pyrmont alike enabled the creation of an organization by means of which thousands of German soldiers are able to regain their health. Radical interference everywhere, especially in the plans of private guests from all over the reich, was necessary.

The task of organizing was huge. The fact that a medical officer with the high rank of oberstabsarzt has been entrusted with the running of Pyrmont (Reservelazarett Bad Pyrmont is its correct name) is proof of the importance of the undertaking. Both from a medical and from a disciplinary point of view, all the members of the armed forces in the place are under him.

Pyrmont offers ideal conditions for the wounded and the sick. The healing power of the springs, the mud baths, the mineral water and sun bathing treatments promise recovery from the prolonged ailments which especially the hard winter at the eastern front brought to so many German soldiers: rheumatism, neuralgia, heart diseases and so on. There are over 2,500 beds at the disposal of the wehrmacht.

BLANKETS FOR RUSSIAN HOSPITALS

Russian War Relief, Inc., 11 East Thirty-Fifth Street, New York, announced on October 29 the purchase for Russian hospitals of sixty thousand blankets which had been urgently requested by Soviet medical authorities. A part of the total number purchased has already been shipped. The Maple Leaf Fund contributed four thousand eight hundred blankets to Russian war relief.

AMERICAN MEDICAL MEN HONORED FOR SERVICES TO CHINA

Dr. Wei Tao-ming, Chinese ambassador to the United States, awarded "Medals of Honored Merit" to seven Americans for wartime services to China at a meeting on October 27 of the American Bureau for Medical Aid to China, participating agency of United China Relief. Six of the recipients were physicians or scientists. Those honored were Dr. R. R. Williams of the Bell Telephone Laboratories, a collaborator in the isolation of vitamin B_1, who has, through the American Bureau for Medical Aid to China, advised Chinese health agencies on vitamins in wartime diets; Aura Severinghaus, chairman of the bureau's library committee, who devoted a sabbatical year to collecting textbooks for China's medical schools, has developed microfilm copies of these libraries and has prepared a set of microscopic slides for teaching anatomy in China's medical schools; Dr. John Scudder of the surgical staff of Presbyterian Hospital, New York, who conducted a nationwide appeal to his colleagues for surgical instruments for use in China; Dr. G. Canby Robinson of Baltimore, honored for long service as chairman of the Baltimore chapter of the bureau; Dr. Walter Judd for devoted service as a physician in China for many years and for his part in arousing America in aid of China; Miss Rebecca Griest for her work in organizing medical aid for China and in the development of the bureau, and Dr. Claude E. Forkner, assistant dean of clinical medicine at Cornell University for services as a member of the medical committee of the bureau and for helping to solve problems of child welfare in China.

Dr. Frank L. Meleney, chairman of the medical committee of the bureau, reported that, since May, four doctors and a sanitary engineer had been sent to China by the bureau and that three other technicians were preparing to return to China. These doctors and technicians, all Chinese, are to serve in China either with the National Health Administration or with the emergency medical service training schools of the Chinese army. The medical committee also has furnished information to government agencies here on the drug situation in China and has worked out a plan for drug manufacture in China. Subcommittees on nursing, public health and medical education are working in close cooperation with health agencies in China to furnish these agencies with technical assistance.

Dr. Co Tui, chairman of the China program committee of the bureau, reported that the bureau was supporting in China maternity and child health programs, medical education, the army medical service and the epidemic control work and public health program of the national health administration.

"HUTTED" HOSPITALS

Fifty-one thousand beds have been added to England's hospital accommodations by means of single story hutments, according to the English minister of health as quoted in a recent issue of the *Hospital*. Some of these are complete self-contained hospitals and others are extensions to existing hospitals. The minister of health is quoted as saying that "In building and planning them, we have learnt many useful lessons that should stand us in good stead in evolving the ideal hospital of the future. We may have learnt too that it is not necessarily true economy to design a hospital to last one hundred years in an age in which medical knowledge and requirements are developing as never before." He suggested that the temporary hutted hospital affords an ideal transitional stage between the traditional hospital and the hospital that will emerge after the war.

THE FEEDING OF DOGS

The Office of War Information has released the following information concerning the feeding of dogs during the government's newly inaugurated voluntary "Share the Meat" program:

Long established practice has set up a belief among dog owners that the mainstay of the canine diet must be red muscle meat, preferably beef; but according to Dr. Imogene P. Earle, nutritionist in the Bureau of Animal Industry, U. S. Department of Agriculture, red muscle meat can be taken away and the dog kept perfectly healthy and strong. One should be sure, however, that the protein, iron and vitamin content of the meat is replaced in the dog's diet. This can be done in several ways. In the voluntary "Share the Meat" plan for dog owners the glandular meats are not included in the week's limit of 2½ pounds per person. Not only can the owner eat as much of these as he wishes but he can give them to his dog too. Hearts, kidneys, liver, spleen and brains, lightly cooked, are even better for the dog, Dr. Earle says, than the muscle meats usually fed to him. Poultry, which is not included in the voluntary meat ration, is a good source of protein. Fish, well cooked, and eggs are, in Dr. Earle's opinion, very good for dogs. Dr. Earle says that milk is an especially good source of protein and calcium and that dried skim milk may under some conditions be the most economical and convenient way to feed milk to an animal.

From 20 to 22 per cent of the dog's diet should be protein, preferably from animal products such as those already mentioned. But animal proteins can be combined with vegetable proteins. Pea soup, for example, made with protein high dried peas and milk, is an excellent dish for the dog. So is peanut meal or soy bean meal mixed with milk, and cooked cereals or bread and fed as a mash. Dehydrated dog foods can be enriched with milk or with gravy from the family roast, or with the water in which vegetables are cooked. If the dog's owner wishes to mix an adequate feed at home, the following ration based on a requirement of 1 pound of dry feed a day is suggested. The starred items are obtainable at feed stores.

*Yellow corn meal	scant ½ pound
*Wheat shorts	scant ¼ pound
*Peanut meal	generous ¼ pound
*Bone meal	¼ ounce
Salt	a pinch
Leafy greens or carrots	2 or 3 tablespoons

The ingredients may be cooked either before or after mixing, but too much cooking destroys some of the vitamin content. To moisten, meat gravy, soup or the water in which vegetables have been cooked should be used. Contrary to popular opinion, Dr. Earle says there is no harm in feeding potato or other starchy foods, provided the cell structure is properly broken down by cooking and by grinding or mashing. Fruits, especially prunes, peaches and apricots, are good for dogs, and there is no harm in fats if the dogs exercise a good deal.

ORGANIZATION SECTION

OFFICIAL NOTES

PREMEDICAL EDUCATION

For the duration of the war the Council on Medical Education and Hospitals of the American Medical Association recommends that:

1. The required premedical education, including satisfactory courses in physics, biology and chemistry, including organic chemistry, shall be included within two calendar years of instruction.

2. The first year of premedical education shall be considered as a qualifying year for a medical course. At the termination of this first year the student, if acceptable, should be matriculated in a medical school.

3. Such a matriculated student shall be recommended for enlistment or commission in the Army or Navy to remain in an inactive status during the second year of his premedical course and until the completion of his medical training, subject to the maintenance of adequate grades.

4. The medical schools accepting students under these conditions will in no way jeopardize their status with any accrediting agency.

The Council and the Association of American Medical Colleges in February 1942 recommended the adoption of an accelerated program involving the completion of the medical course in three calendar years. Such a program is already in effect in practically all the medical colleges of the country.

These further recommendations adopted by the Council at its Nov. 8, 1942 meeting involve a program providing for the completion of a student's medical education and the granting of the M.D. degree within a period of five years after graduation from high school as contrasted with seven to eight years before the war. Thus medical education has cooperated in the war effort to increase the supply of physicians by speeding up its program so as to shorten the period required for the M.D. degree by from two to three years.

The Association of American Medical Colleges adopted similar recommendations at its annual meeting held in Louisville on Oct. 27, 1942.

Such a program as has been recommended would involve the protection of between nine and ten thousand students during the first year of their premedical college training in order to provide approximately six thousand five hundred satisfactory matriculants for the medical schools of the country on the completion of this first year of college.

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE

The Council on Medical Education and Hospitals of the American Medical Association, at a meeting held on November 8, restored the University of Georgia School of Medicine to the list of approved medical schools maintained by the Council with the status of being on probation.

This action restores to the University of Georgia School of Medicine and of all its matriculated students all advantages which may accrue to colleges included in the list of approved medical colleges maintained by the Council.

Probationary status indicates that there are certain factors or relationships which should be clarified before the Council grants unqualified listing of a school as an approved medical school.

WOMAN'S AUXILIARY

Mississippi

The auxiliary to the Northeast Mississippi Thirteen Counties Medical Society held its quarterly meeting, September 8, in Amory at the home of Mrs. M. Q. Ewing. The president, Mrs. Stanley A. Hill of Corinth, presided. The program included two honored guests—Dr. Shelton Horsley of Richmond, Va., and Dr. Seale Harris of Birmingham, Ala.—both of whom placed importance on the work doctors' wives can do in enlightening the public. Dr. Horsley emphasized the control of cancer. Dr. Harris discussed foods, with special attention to the vitamins. He also made a comparison of the physical fitness of our armed forces in World War I and in the present war.

Oregon

The annual meeting of the executive board of the Woman's Auxiliary to the Oregon State Medical Society was held September 12 in Portland. Mrs. C. E. Hunt, the president, presided.

Mrs. F. Bertram Zener of Portland was elected president for the coming year and Mrs. Grover C. Bellinger of Salem, president-elect. At the luncheon a saddle bag 150 years old was presented to the auxiliary by Dr. George Hayden Westerfield and a small surgical kit by Dr. Alfred C. Kinney. Dr. Westerfield, now 84 years old, said that the saddle bag had been carried by his father in the war of 1812. Dr. Kinney, who was the first as well as the fiftieth president of the Oregon State Medical Society, is now 92 years old. His gift was dated 1871 and had belonged to his brother Dr. Augustus C. Kinney.

It was decided that for its major project this year the auxiliary would concentrate on working with the Medical and Surgical Relief Committee of America in collecting all kinds of surgical equipment, including old instruments, which can be reconditioned and made available for civilian defense needs or for distribution to foreign relief through the proper agencies.

Pennsylvania

The Schuylkill auxiliary met June 9 at the home of Mrs. J. Edward McDowell in Pottsville. After the business session a talk on "Flower Arrangements for the Home" was given by Mrs. Henry Houch, Weston Place. A plant sale was conducted and a soldier doll wearing new $1 bills was awarded; about $30 was realized from this project alone. The proceeds will go to the Medical Benevolence Fund. More than 60 persons attended.

Wisconsin

Twenty-one members and two guests were present at the meeting of the Woman's Auxiliary to the Washington-Ozaukee County Medical Society, held recently at the home of Mrs. K. L. Bauer in West Bend. Mrs. R. E. Fitzgerald of Wauwatosa, who has been president of the state and of the national auxiliary, discussed five books: "Ivory Mischief" by Arthur Meeker Jr. of Chicago, "Windswept" by Mary Ellen Chase, "Mrs. Appleyard's Year" by Louise Andrews Kent, "Dragon Seed" by Pearl Buck and Robert Nathan's "A Winter Tide."

Fifty members attended the May meeting of the Woman's Auxiliary to the Milwaukee County Medical Society. Mmes. Angelo Hoffman, Clarence Slater, Read Widrig and G. Maasen gave a piano duo. Miss Doris Brockway, instructor in home economics at Milwaukee Downer College, spoke on "New Fabrics the War Has Given Us."

At a meeting of the Auxiliary to the Sheboygan County Medical Society at the home of Mrs. Alton J. Schmitt Mrs. L. F. Pauly spoke on "Good Health in Ecuador," and Mrs. Paul B. Mason reported on "Nutrition."

Every member who had not contributed before gave $1 to the cancer fund being raised by the Women's Field Army for the Control of Cancer. The auxiliary voted to give $15 for the purchase of utility kits for the Red Cross.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Alien Japanese Physician Sentenced for Abortion.—Dr. Hiroshi Ben Inouye, Phoenix, formerly of Glendale, was sentenced to a term of three to five years following conviction on a charge of performing a criminal abortion on a 21 year old woman. According to the *Arizona Republic*, October 14, the jury acquitted him of second degree murder in connection with the death of the woman. Dr. Inouye was born in Japan in 1901, graduated at the Chicago Medical School in 1935 and was licensed to practice medicine in Arizona, Jan. 6, 1937.

CALIFORNIA

Quinine Found in Home for Aged.—A recent survey of institutions under the control of Dr. Jacob C. Geiger, director of public health of the city and county of San Francisco, revealed 82,700 gelatin coated pills of quinine sulfate in the Lagnuna Honda Home, an institution for aged indigent ill. The pills had been in the institution since 1906. An arrangement was made by the controller of the city whereby the capsules were turned over to the U. S. Army.

CONNECTICUT

Fined for Practicing Without License.—Dr. Ray D. Hester, Granville, Mass., was fined $200 after pleading nolo contendere to a charge of practicing medicine in Hartford without a state certificate of registration, the Hartford *Times* reported October 14. Dr. Hester is licensed to practice medicine in Massachusetts but is not licensed to practice in Connecticut. The *Times* pointed out that Dr. Hester had distributed cards which said that he would pay toll charges on calls to Granville from Hartland and Granby, just over the state line from his home, where he has practiced since 1939. Dr. Hester graduated at the College of Physicians and Surgeons, Boston, in 1939.

Neuropsychiatric Institute Affiliates with Columbia University.—A professional affiliation between the department of nursing of Columbia University College of Physicians and Surgeons (Presbyterian Hospital School of Nursing in the city of New York) and the Neuro-Psychiatric Institute of the Hartford Retreat has been announced. Under the affiliation, students with university degrees who are receiving advanced time credit in the department of nursing at Columbia will undertake an intensive two months course in neuropsychiatric nursing at the institute under the direction of the institute's medical and nursing staffs. Fifteen students are expected to begin classes in December.

ILLINOIS

Personal.—Dr. Louis Belinson, Dixon, assistant managing officer of Dixon State Hospital, has been appointed acting managing officer of the Lincoln State School and Colony, Lincoln, succeeding Dr. Richard J. Graff, Lincoln.

Chicago

Joint Session on Heart Disease.—The Chicago Medical Society and the Chicago Heart Association will hold a joint meeting at the Chicago Woman's Club, November 18, to hear the following speakers: Drs. Stanley Gibson on "Treatment of Heart Disease in Children," William A. Brams, "Treatment of Heart Failure," and Newell C. Gilbert, "Treatment of Coronary Thrombosis."

Course in Electrocardiographic Interpretation.—A course in electrocardiographic interpretation for graduate physicians will be given at the Michael Reese Hospital by Dr. Louis N. Katz, director of cardiovascular research. The class will meet each week, starting Wednesday, February 17, for twelve weeks, from 7 to 9 p. m. Information may be obtained from the cardiovascular department, Michael Reese Hospital, Twenty-Ninth Street and Ellis Avenue.

Lectures on Emergency Medical Service.—On October 26 James K. Senior, Ph.D., research associate in chemistry, University of Chicago, gave the first in a group of three lectures on emergency medical services sponsored by the Office of Civilian Defense, Chicago Metropolitan Area. Dr. Senior discussed general aspects of gas warfare with particular reference to the defense of the Chicago area. Dr. Franklin C. McLean, professor of pathologic physiology at the University of Chicago, spoke, November 2, on lung injuriants and systemic poisons: pathology, first aid and therapy. Dr. William Bloom, professor of anatomy, University of Chicago, lectured, November 9, on vesicants, lacrimators and sternutators: pathology, first aid and therapy.

INDIANA

District Meeting.—The sixty-eighth semiannual meeting of the Indiana Eleventh Councilor District Medical Association was addressed in Peru, October 21, by Dr. Fredrick F. Yonkman, Detroit, on "The Sulfa Drugs"; Commander Robert H. Collins, M.C., U. S. Navy, Washington, D. C., "Some Experiences in Twenty-Seven Years in the Navy," and Dr. Ross C. Ottinger, Indianapolis, "Conservative Pelvic Surgery."

Dr. Rice Named Acting State Health Commissioner.—Dr. Thurman B. Rice, health education consultant, state board of health, Indianapolis, has been appointed acting state health commissioner. Dr. John W. Ferree, Indianapolis, has been granted leave of absence as state health commissioner to serve as lieutenant commander in the medical corps of the U. S. Navy. Dr. Ferree has been state health commissioner since October 1940. He had also served as chief of the bureau of local health administration. Dr. Rice, until his recent appointment as health education consultant, was chief of the bureau of health and physical education. He is also editor of the *Monthly Bulletin* of the state board of health.

LOUISIANA

Personal.—Dr. Eugene H. Countiss, New Orleans, has been named chief of the emergency medical service in Louisiana. ——Marion Winfred Hood, Ph.D., formerly associate in medicine at the University of Illinois College of Medicine, Chicago, has been appointed assistant professor of parasitology in the department of public health at Louisiana State University School of Medicine, New Orleans.——Dr. Edgar W. Warren, Abbeville, director of the Vermilion Parish Health Unit, has been appointed to a similar position in Jefferson Parish.——Dr. Bjarne Pearson, New Orleans, has been appointed associate professor of pathology and bacteriology at Tulane University of Louisiana School of Medicine, New Orleans.——Dr. Jacob Katzeff, formerly of Brooklyn, N. Y., has been appointed health officer of La Fourche and Assumption parishes.

MARYLAND

Dr. Robert Patterson Named Dean at Maryland.—Major Gen. Robert U. Patterson, U. S. Army, retired, formerly surgeon general, has been appointed dean of the University of Maryland School of Medicine and College of Physicians and Surgeons and superintendent of the University Hospital in Baltimore. Dr. Patterson was dean at the University of Oklahoma School of Medicine, Oklahoma City, where he recently reached the retirement age. He graduated at McGill University Faculty of Medicine, Montreal, in 1898 and was an honor graduate of the Army Medical School, Washington, D. C., in 1902. Dr. Patterson succeeds Dr. Hamilton Boyd Wylie, Baltimore, who has been acting dean of the University of Maryland School of Medicine since the retirement of Dr. James M. H. Rowland, Baltimore, in 1939.

MICHIGAN

Training Program for Physicians in Industry.—The bureau of industrial hygiene of the Michigan Department of Health will conduct a short training course in Lansing for physicians expecting to serve in industry. The first week of the three week course will be confined to didactic work covering the preventive aspects of industrial medicine. The second week will be devoted to field work including visits to industrial plants investigating actual hazards and determining the extent of exposure. During the third week physicians will be assigned to full time medical departments in various industries to observe the actual work of those departments. No charge will be made for any of the work covered during the period but it is expected that those enrolling will defray their own living expenses. The plans for the course were developed through the cooperation of the Procurement and Assignment Service; Subcommittee on Industrial Health and Medicine, Social Security Agency; Council on Industrial Health of the American Medical Association; Committee on Industrial Health of the Michigan State Medical Society, and the Bureau of Industrial Hygiene of the state department of health.

NEVADA

State Medical Election.—Dr. John R. McDaniel Jr., Las Vegas, and now in military service, will be continued as president-elect of the Nevada State Medical Association until such time as he can assume the office, in accordance with action taken during the recent annual meeting of the association. Dr. Daniel J. Hurley, Eureka, first vice president, was inducted into the presidency and Dr. Lemuel R. Brigman, Reno, second vice president, was moved forward to fill the first vice presidency. Dr. John A. Fuller, Reno, was chosen second vice president and Dr. Roland W. Stahr, Reno, was chosen secretary-treasurer to take office January 1. During the annual dinner Dr. Horace J. Brown, Reno, who has been secretary for many years, was presented with a watch and chain to mark his completion of twenty-five years' service as an officer and adviser.

NEW HAMPSHIRE

Personal.—Dr. Edward S. Thorpe, formerly of Philadelphia, has been appointed medical director of the St. Paul's School and will be associated with Dr. Carleton R. Metcalf, Concord, school physician.

Staff Changes on State Board.—Dr. Mary M. Atchison, for some years director of the divisions of maternal and child health and crippled children's services and acting director of the division of epidemiology and local health work, was recently named acting deputy secretary of the state board of health. In her new position Dr. Atchison will cooperate with local health authorities in the promotion of community health programs. Dr. Mildred I. A. Chamberlin, Hillsboro, succeeded Dr. Atchison as director of the division of maternal and child health and crippled children's services. The divisions of epidemiology and venereal disease control have been consolidated. Dr. Cleon W. Colby, health officer of Exeter District, has been named acting director. For the present Dr. Colby will continue in charge of the Exeter office.

NEW JERSEY

Oil Products Company Expands.—The National Oil Products Company, Harrison, recently announced that it had acquired Rare Chemicals, Inc., at Flemington, and was planning a program of expanded production of specialized drugs and pharmaceuticals. The 7½ acre Flemington plant was acquired by the company in the first sale by the alien custodian's office of any of the properties that have been seized from foreign nationals. It will be operated as a wholly owned subsidiary and will have its own board of directors and officers. The announcement stated that production of the chemicals and other products formerly manufactured by Rare Chemicals would be expanded as rapidly as circumstances would permit. Among the products now being manufactured at the plant are anesthetics, hormone substances and analgesics for ethical distribution.

NEW YORK

Psychiatric Survey of Men Classified Under Selective Service.—The New York State mental hygiene committee of the State Charities Aid Association has been directing a psychiatric classification of men examined for Selective Service to secure social histories for use by examiners. Up to October 1, more than 17,000 Selective Service registrants had been investigated. The New York City Committee on Mental Hygiene has been carrying on a similar project, both programs being intended to aid in deferring men who are poor risks for the army because of abnormal mental conditions. Under the state plan, the advisory committees were appointed in each county, which in turn recommended social workers for each board in the county and also assisted in training the social workers selected.

New York City

Second Harvey Lecture.—Curt P. Richter, Ph.D., associate professor of psychobiology, Johns Hopkins University School of Medicine, Baltimore, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine November 19. He will speak on "Total Homeostasis."

Dr. Thomas Dublin Appointed Professor.—Dr. Thomas D. Dublin, epidemiologist in the state division of communicable diseases, Albany, has been appointed head of the department of preventive medicine and community health at the Long Island College of Medicine, effective September 21. Dr. Dublin graduated at Harvard Medical School, Boston, in 1936. He has a degree of doctor of public health from John Hopkins University School of Hygiene and Public Health, Baltimore.

Session on Chronic Pulmonary Diseases.—The Tuberculosis Sanatorium Conference of Metropolitan New York will conduct a clinical session on chronic pulmonary diseases at the Cornell University Medical College Amphitheater, December 9. The speakers will be Dr. Herbert R. Edwards, Lieut. Col. Edward N. Packard, M. C., U. S. Army, Fort Dix, N. J., and Lieut. Comdr. David Ulmar, M. C., U. S. Navy, Chelsea, Mass., and Major Freeman Nathan, Fort Joy. Dr. Edgar Mayer, assistant professor of clinical medicine at Cornell, will lead the discussion at an informal presentation of x-ray films.

Lecture Named to Honor Dr. Niles.—The annual lecture sponsored by Tau chapter of Nu Sigma Nu at Cornell University Medical College will henceforth be known as the Walter L. Niles Memorial Lecture in honor of the late Dr. Niles, who at the time of his death, Dec. 22, 1941, was acting dean of Cornell. This year the lecture was given by Dr. Irvine H. Page, director, Lilly Laboratory for Clinical Research, Indianapolis City Hospital, on October 20; his subject was "The Modern Concept of Hypertension." Dr. Niles had been professor of clinical medicine from 1916 until his death and had been dean from 1919 to 1928.

Public Lectures.—The second series of lectures to the laity on medicine and the public health will open with a talk, November 19, by Clarence C. Little, Sc.D., Bar Harbor, Maine, on "The Problem of Cancer." Others in the series will be Drs. John A. Kolmer, Philadelphia, on "Winning the Battle Against Infectious Disease"; Thomas D. Dublin, "Epidemics and World Conflicts"; William D. Stroud, Philadelphia, "The Fight Against Heart Disease," and Louis Tuft, Philadelphia, "Modern Concept of Allergy." The series is sponsored by the Brooklyn Institute of Arts and Sciences, the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn.

Cardiac Programs.—The New York Heart Association will hold three scientific sessions at the New York Academy of Medicine instead of four during the coming year. Drs. Oswald F. Hedley, U. S. Public Health Service, Bethesda, Md., and Rufus B. Crain, Rochester, N. Y., on December 1 will discuss "The Cardiac in Industry." On January 19 a dinner session will be held with the section on medicine of the Academy of Medicine and the topic for discussion will be "Cardiovascular Diseases and Injuries in War." It is anticipated that Dr. Philip D. Wilson will be the speaker. On March 23 reports of original investigations being conducted in the affiliated cardiac clinics will be presented.

Advisory Committee on Zoology at Columbia.—An advisory committee of zoologists from other institutions to the department of zoology at Columbia University has been appointed to serve as liaison between the department and zoologists in other universities. Columbia's department is observing its fiftieth anniversary this year. Members of the new committee include Hubert B. Goodrich, Ph.D., Wesleyan University, Middletown, Conn.; Edmund N. Harvey, Ph.D., Princeton University, Princeton, N. J.; Charles W. Metz, Ph.D., University of Pennsylvania, Philadelphia; Hermann J. Muller, Ph.D., Amherst College, Amherst, Mass.; William Procter, D.Sc., Academy of Natural Sciences, Philadelphia; Alfred S. Romer, Ph.D., Harvard University, Cambridge, Mass., and Lorande L. Woodruff, Ph.D., Yale University, New Haven, Conn.

Committee to Coordinate Wartime Care of Children.—On October 22 Mayor La Guardia appointed a committee of fourteen to coordinate all effort in providing daytime care for children of mothers working in defense industries. The appointment of the committee was one of the recommendations of a special committee named last June to study the problem. William Hodson, LL.B., welfare commissioner, is the chairman of the new committee and Alice V. Keliher, secretary. Dr. Ernest L. Stebbins, commissioner of health, is one of the committee members and also served on the original committee of three named to study the problem. The report makes recommendations which suggest (1) the establishment of eight school nursing centers, supplementing the thirty-two now operating under the WPA; (2) the extension of its present after-school program for children, and (3) the establishment of a central coordinating committee on daytime care of children, which recommendation was carried out with the appointment of the new committee. The fourth recommendation urges the establishment of an office of information, advice and consultation where mothers can talk over their problems. The committee of three appointed originally to study the problem and submit a report comprised Welfare Commissioner Hodson, Dr. Stebbins and John E. Wade, deputy superintendent of the board of education, who is also a member of the new daytime committee.

OHIO

Changes in Health Personnel. — Dr. James F. Wilson, Washington Courthouse, has resigned as health commissioner of Fayette County, a position he has held for sixteen years, it is reported. —— Dr. Rush R. Richardson has been appointed health commissioner of Springfield. He was succeeded as health commissioner of Clark County by Dr. Robert M. Taylor, North Hampton.

Outbreak of Diarrhea in Newborn Infants.—Newspapers reported, October 23, that 16 babies had died in an outbreak of diarrhea among newborn babies in St. Luke's Hospital, Cleveland. The outbreak was first reported in mid-September. The newspapers stated that similar outbreaks were reported to have occurred in Carlisle, Pa., Detroit, Toledo, Dayton and Indianapolis.

Annual Postgraduate Day.—The University of Toledo held its annual postgraduate day, November 6, dedicating this year's course to the late Dr. Elmer W. Heltman, Toledo, who died March 3, 1906. Speakers included Dr. Brien T. King, Seattle, on "Deep Infections of the Neck" and "A New and Function-Restoring Operation for Bilateral Abductor Cord Paralysis," and Dr. John J. Moorhead, New York.

Course in Gas Warfare.—The first of a series of six hour courses in the medical aspects of gas warfare will be given in Columbus, November 16, 23, 27, under the auspices of the Ohio State University College of Medicine and the Columbus Academy of Medicine. Instructors for the course will be:

Dr. Charles A. Doan, professor of medicine.
Dr. Paul H. Charlton, assistant clinical professor of surgery.
Dr. Roll H. Markwith, state health director and state director of Emergency Medical Services.
Major W. W. Towne, sanitary engineer of the state department of health.
Mr. Merle Paul, state gas consultant.
Mr. Howard M. Simmonds, senior gas officer for Columbus.
Dr. Clayton S. Smith, professor of physiological chemistry, pharmacology and materia medica.
Dr. Albert D. Frost, professor of ophthalmology.
Dr. E. Harlan Wilson, assistant professor of surgery (orthopedics).
Dr. Harry L. Reinhart, associate professor of pathology.
Dr. Herman A. Hoster, instructor in medicine.

All are from Columbus. Similar projects are being planned at the University of Cincinnati College of Medicine and Western Reserve University School of Medicine, Cleveland, for physicians in their respective sections of the state.

OREGON

Personal. — Dr. Willard J. Stone, Corvallis, has been appointed health officer of Marion County, succeeding Dr. Vernon A. Douglas, Salem, who was on leave of absence for the Oregon Civilian Defense Council.

Annual Registration Due December 1.—All practitioners of medicine and surgery holding licenses to practice in Oregon are required by law to register annually on or before December 1 with the secretary of the board of medical examiners and at that time to pay a fee of $5. A practitioner failing to register is subject to a penalty of $1 for each thirty days or part thereof of default, and his failure to reregister within ninety days after December 1 is a misdemeanor.

PENNSYLVANIA

Society News.—Dr. William G. Lennox, Boston, discussed "The Treatment of Epilepsy and Migraine" before the Harrisburg Academy of Medicine, Harrisburg, October 20.——The Reading Eye, Ear, Nose and Throat Society was addressed recently by Dr. Alfred Cowan, Philadelphia, on "Interesting Aspects of Refraction."

Science Building Named in Honor of Dr. Pfahler.—The three quarter million dollar science building at Ursinus College, Collegeville, was named the Pfahler Hall of Science during the Founders' Day convocation, October 13, in honor of Dr. George E. Pfahler, professor of radiology at the University of Pennsylvania School of Medicine, Philadelphia, and a member of the board of directors of Ursinus College since 1935. The principal address during the exercises was given by Dr. William David Coolidge, vice president and director of research for General Electric Company, Schenectady, N. Y., on "The Role of Science Institutions in Our Civilization." Dr. Pfahler, who was born in Numidia in 1874, graduated at the Medico-Chirurgical College of Philadelphia in 1898 and served there as clinical professor of roentgenology from 1909 to 1912. He has been professor of radiology at the University of Pennsylvania since 1916. Dr. Pfahler has been president of the American Roentgen Ray Society, the American Electrotherapeutic Association, the American Radium Society and the American College of Radiology. He served as an American delegate to the 1928 International Conference on Cancer in London and at the second International Congress of Radiology in Stockholm. He was an honorary vice president of the fifth International Conference on Radiology in 1937 and for the International Conference on Cancer in 1939. The hall of science which was erected in 1931-1932, contains thirteen teaching laboratories, two research laboratories and nine professors' laboratories, seven classrooms and a lecture hall.

Philadelphia

Grant for Study on Renal Hormones. — The John and Mary R. Markle Foundation for research has given Temple University School of Medicine a grant of $2,500 to further the study on "renal hormonal mechanism in hemorrhage, shock and other hormone conditions," now being carried out by Drs. Dean A. Collins, assistant professor of physiology, and Angie G. S. Hamilton. The grant is the second within a few months to be received from the Markle Foundation. The first, of $2,900, received a few months ago, was for a study of body fluids in children with persistent acidosis now being directed by Dr. Waldo E. Nelson, professor of pediatrics.

Report on Physicians' Aid.—The Aid Association of the Philadelphia County Medical Society has recently made public its annual report for 1941. The committee on benevolence distributed $5,424 during the year to annuitants and beneficiaries. Annuitants are elderly and ill physicians, unable to support themselves and their families, and widows and daughters of deceased physicians with no income or with income insufficient to supply the necessities of life. Beneficiaries are physicians and widows and daughters of deceased physicians in financial difficulty that appear to be of a temporary character or who needed for a limited period shelter, food, clothing, coal, medicine, dentures, eyeglasses, hospitalization and other essentials. Cash contributions totaling $4,419 were received consisting of legacies and donations. The membership of the association was increased by sixty-two: fifty-nine new annual members and three new life members. The total active membership as of Dec. 31, 1941 was 498, as compared with 486 for the same date in 1940.

TEXAS

Lecture on X-Rays.—Dr. Byrl R. Kirklin, Rochester, Minn., spoke at the fifth in a series of medical conferences sponsored by the Medical Replacement Training Center at Camp Barkeley, Texas, October 30, on "The Value of the Roentgen Rays to Diagnosis as It Pertains to the Physician Doing General Work."

Post Graduate Medical Assembly.—The Post Graduate Medical Assembly of South Texas will hold its eleventh annual meeting at the Rice Hotel, Houston, December 1-3. There will be nine guest speakers for the general sessions and four for the section of ophthalmology and otolaryngology, which meets independently. On the last day a special program on military and civilian defense will be featured. The guest speakers will include:

Dr. John C. Burch, Nashville, Tenn., obstetrics and gynecology.
Dr. Robert Gordon Douglas, New York, obstetrics and gynecology.
Dr. Lawrence S. Fallis, Detroit, surgery.
Dr. Roy Biggs Henline, New York, urology.
Dr. Chester M. Jones, Boston, medicine.
Dr. Carl H. McCaskey, Indianapolis, otolaryngology.
Dr. Donovan J. McCune, New York, pediatrics.
Dr. James H. Means, Boston, medicine.
Dr. Arthur W. Proetz, St. Louis, otolaryngology.
Dr. G. Allen Robinson, New York, radiology.
Dr. Georgiana M. Dvorak Theobald, Oak Park, Ill., medicine.
Dr. Owen H. Wangensteen, Minneapolis, surgery.
Dr. Meyer Wiener, St. Louis, ophthalmology.

VIRGINIA

Health Department Activities.—Halifax and Pittsylvania counties have been consolidated under the supervision of Dr. Daniel C. Steelsmith and will be known as the Halifax-Pittsylvania Health District, with headquarters at South Boston. ——Dr. Marvin E. McRae, Chatham, health officer of Pittsylvania County, succeeds Dr. Samuel S. Shouse, Luray, health officer of the Page-Warren-Shenandoah Health District. The latter was granted a leave of absence to enter military service. Dr. James A. Dolce, U. S. Public Health Service, Washington, D. C., has been appointed health officer of the Fairfax-Prince William-Stafford Health District, succeeding Dr. Clifford E. Waller, Leesburg, who remains as health officer of Loudoun County with headquarters at Leesburg. Loudoun County was formerly a unit in the health district.

GENERAL

Southern Surgical Cancels Meeting.—The Southern Surgical Association has canceled its annual meeting which was to be held in Savannah, Ga., December 8-10.

New Abstracts of Food and Nutrition Research.—*Biological Abstracts* announces the establishment of a new (seventh) section, "Specially Assembled Abstracts of Food and Nutrition Research," to be initiated in January 1943. The section will consist of an assembly and reprinting of all the abstracts contained in *Biological Abstracts* that deal with foods and nutrition. Each volume will consist of ten abstract issues; subscribers will receive the index to the complete edition of *Biological Abstracts*. The subscription price will be $6 a year (plus 50 cents for postage outside the United States). Inquiries should be addressed to *Biological Abstracts*, University of Pennsylvania, Philadelphia.

Sigma Xi Lecturers. — The Society of the Sigma Xi, national honor society for the promotion of scientific research, has announced its national lecturers for 1943. Two of the five lecturers are Detler W. Bronk, Ph.D., professor of neurology at the University of Pennsylvania School of Medicine, Philadelphia, and Conrad A. Elvehjem, Ph.D., professor of agricultural chemistry, University of Wisconsin, Madison, Wis., on "Physical Structure and Biological Action of Nerve Cells" and "The Present Status of the Vitamin B Complex" respectively. The lectures will be delivered before special meetings at universities and colleges throughout the country during January, February, March and April, the dates and places to be announced later.

Fellowships Awarded.—The Lalor Foundation announces the award of its sixth annual series of fellowships to:

A. Calvin Bratton, University of Texas, Austin, to work with Dr. Eli K. Marshall Jr. at Johns Hopkins University School of Medicine, Baltimore.

Edward H. Frieden, University of California, Berkeley, to work with Roger J. Williams, Ph.D., at the University of Texas.

Francis J. Reithel, University of Oregon, Eugene, to work with Edward A. Doisy, Ph.D., at the St. Louis University School of Medicine, St. Louis.

James R. Weisiger, Johns Hopkins University, to work with Albert Baird Hastings, Ph.D., at Harvard Medical School, Boston.

The work of the recipients is in fields closely related with problems of the war. Owing to war conditions, appointments to the five remaining fellowships originally scheduled for the 1942-1943 series have been postponed. The foundation also announces that its present plan is to discontinue its regular program of fellowship awards until the demobilization of scientific personnel at the end of the war. Thus it is planned that the usual fellowship awards of the foundation will go into a reserve to form an accumulation for postwar assignment. To date fifteen such awards have been scheduled to be made available at that time for postdoctorate research in chemistry. The standard annual stipend of a Lalor Foundation award is $2,000.

Dr. Winslow Receives Sedgwick Medal. — Charles-Edward A. Winslow, Dr.P.H., Anna M. R. Lauder professor of public health at Yale University School of Medicine, New Haven, Conn., since 1915, was awarded the William Thompson Sedgwick Memorial Medal during the annual meeting of the American Public Health Association in St. Louis, October 27. The medal is for distinguished service in public health and was presented by Dr. Haven Emerson, New York, 1935 winner of the award. Dr. Winslow received his degree of doctor of public health at New York University in 1918 and began his career in public health as assistant health officer of Montclair, N. J., in 1898, subsequently serving on the staffs of the Massachusetts Institute of Technology, Boston; University of Chicago, and the College of the City of New York; from 1910 to 1922 he served as curator of public health at the American Museum of Natural History, New York. For one year, 1914-1915, he was director of the division of public health education of the New York State Department of Health. He formerly served as a member of the board of scientific directors of the International Health Division of the Rockefeller Foundation and president of the American Public Health Association. He has been editor-in-chief of the *Journal of Bacteriology* since 1916.

Supreme Court Asked to Declare Unconstitutional Contraceptive Legislation.—About seven hundred physicians throughout the United States filed briefs in support of a petition asking the U. S. supreme court to review a decision by the Connecticut Supreme Court of Appeals holding legislation which prohibits physicians from prescribing contraceptive devices for married women when necessary to preserve life or health as constitutional. The physicians' briefs supported a petition of Dr. Wilder Tileston, David P. Smith clinical professor of medicine at Yale University School of Medicine, New Haven, and a practicing physician. According to the Washington *Star*, October 25, Dr. Tileston started the litigation by requesting an opinion as to whether the statute would prohibit him from prescribing contraceptives to three specified patients. A brief filed by one hundred and sixty-six physicians in thirty-six states and the District of Columbia contended that "medical opinion with substantial unanimity supports the prescription and use of contraceptives in cases" like those involved, the *Star* stated. Another brief presented by five hundred and forty-one Connecticut physicians asserted that Dr. Tileston was "faced with the alternative of failing in his duty as a physician or subjecting himself to a criminal penalty in the event that this statute is found to be constitutional" (THE JOURNAL, July 4, p. 817).

Special Society Elections. — Dr. Lawrence T. Post, St. Louis, was chosen president-elect of the American Academy of Ophthalmology and Otolaryngology during its annual session in Chicago, October 13, to take office Jan. 1, 1944, and Dr. James A. Babbitt, Philadelphia, will take office as president Jan. 1, 1943. Vice presidents are Drs. Sanford R. Gifford, Chicago; Wesley C. Bowers, New York, and William A. Krieger, Poughkeepsie, N. Y. Dr. William L. Benedict, Rochester, Minn., was elected executive secretary to succeed the late Dr. William P. Wherry, Omaha.——Dr. Lewis F. Smead, Toledo, Ohio, was chosen president-elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons recently and Dr. Willard R. Cooke, Galveston, Texas, was installed as president. Dr. James R. Bloss, Huntington, W. Va., is the secretary. The Homestead, Hot Springs, Va., was designated as the place for the next annual session, Sept. 9-11, 1943. ——Dr. Sherwood Moore, St. Louis, was chosen president-elect of the American Roentgen Ray Society at its recent annual session, and Dr. Ralph S. Bromer, Bryn Mawr, Pa., was installed as president. Dr. H. Dabney Kerr, Iowa City, is the secretary. —— Dr. Fred B. Moor, Los Angeles, was elected president of the American Congress of Physical Therapy at its annual meeting in September, succeeding Dr. Abraham R. Hollender, Miami Beach, Fla. Other officers include the following: vice presidents, Drs. Kristian G. Hansson, New York; Miland E. Knapp, Minneapolis; Walter S. McClellan, Saratoga Springs, N. Y.; Herbert W. Kendell, Dayton, Ohio, and Kenneth Phillips, Miami, Fla. Dr. Richard Kovacs, New York, secretary and Dr. John S. Coulter, Chicago, treasurer. In recognition of distinguished services to the science of physical therapy, gold key awards were made by the congress to President Roosevelt, Bernard M. Baruch, LL.D., New York, Dr. William Bierman, New York, and Dr. William S. C. Copeman, London.

CANADA

Memorial to the Late Dr. Thomas Gibson.—A number of old medical books have been donated to the library by graduates of Queen's University Faculty of Medicine, Kingston, with the suggestion that they form the nucleus of a special library of medical history to serve as a memorial to the late Dr. Thomas Gibson, who for a number of years served as professor of pharmacology and therapeutics and at the time of his death was professor of the history of medicine at the university. It is hoped that other contributions will be made by alumni and friends to help toward the building of a comprehensive collection of textbooks to honor Dr. Gibson.

LATIN AMERICA

Personal. — Dr. Gregorio Aráoz Alfaro, Buenos Aires, recently celebrated his fiftieth anniversary in the practice of medicine, when a special ceremony was held by the dean and members of the Faculty of Medicine of Buenos Aires and of the Academy of Medicine. A celebration was also held at the Institute de Semiología y Clínica Propedéutica del Hospital de Clínicas of Buenos Aires to unveil a plaque in honor of Dr. Alfaro.——Dr. Moreira da Fonseca of Rio de Janeiro, professor in the chair of tropical diseases of the Faculdade Nacional de Medicina, Rio de Janeiro, was appointed president of the Academia Nacional de Medicina to fill the vacancy left by Dr. Carlos Chagas, who died Nov. 8, 1934.——Dr. Aquiles S. Lentino of the Instituto de Clinica Quirurgica of Buenos Aires was given the first scholarship of the Arce Foundation of Buenos Aires. The scholarship of $2,200 a year is for studies in the Uuited States. Dr. Lentino began use of the scholarship in October in the Barnes Hospital, St. Louis, working under the guidance of Dr. Evarts A. Graham.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct 10, 1942.

Germany's Lack of Doctors: The Nazi Conception of "Public Health"

The *Times* states that Germany is now facing a lack of doctors, nurses and hospitals. Since 1933 the number of medical students has dropped by half. The elimination of Jewish physicians caused a considerable reduction of medical personnel. Then came unforeseen demands on the eastern front. According to official admissions, where previously German civilians had one doctor for every two thousand people they have now only one for every twelve or fifteen thousand. The coming winter is likely to increase the need for medical services both at home and in the field. Hitler has appointed Professor Dr. Brandt to be commissar general for medical and health services to act as liaison between the military and civilian sectors and to receive orders direct from him. He has thus once again shortcircuited the normal state administrative services. He continues to develop the administration that he has declared he desires—men who will override all precedents and precepts and act according to the need of the hour. Brandt will pass Hitler's decisions to General Oberarzt Professor Doktor Handloser, chief of the army medical service, on the one hand, and to Dr. Conti, reich health leader, on the other. It is stated in the British press that measures objectionable even to the German people have been taken by the puppet controllers of "a new hygiene." Their notion of "the people's health" is in conflict with the ideals of Western civilization. The "health" of the nation is to be promoted by elimination of the weak. Hence the campaign of "mercy death," the systematic murder of the inmates of asylums and nursing homes. Hence also the propaganda that every woman who bears a child to a German soldier, whether married or not, is fulfilling a patriotic duty. The organ of the notorious S. S., "das schwarze corps," aims at the compulsory dissolution of childless marriages and the compulsory production of children at least by every married couple, if not by every able bodied man and woman. The S. S. has become the ruling power both in Germany and in occupied Europe. Its tyranny controls everything, even matters of public health.

Good Health of United States Troops in Britain

Brig. Gen. Paul R. Hawley, chief medical officer of the United States Army in Europe, has stated that the sick rate among American troops in Great Britain has for the past six months been below that of the troops in the United States. This was chiefly due to the men over here having been conditioned by at least one year's service, the sick rate being naturally higher among recruits. But he looked forward to the winter with some apprehension because the English winters were not to the liking of Americans and they had to get acclimatized. He expected, for instance, many colds, and precautions were being taken such as providing drying facilities so that men should not have to put on wet clothing. Different countries had different breeds of germs, and Americans in a strange country were not immune from them. In the conditions of today it was necessary to have light surgical teams that could go very far forward and thus take assistance to casualties who might not be transported to base hospitals for several days. These teams would consist of three doctors, a nurse and one or two soldiers, and their equipment would be carried by ordinary transport.

Food in Powder and in Blocks

Since the outbreak of the war the Ministry of Food, which controls everything connected with food—its production, importation, storage and rationing—has followed the policy that, in spite of many restrictions, every one should have sufficient for the maintenance of health and strength. It has neglected no means of ensuring adequate rations and thus has contributed to our fighting strength. Home production of food has been enormously increased in order to save shipping for war purposes. Another measure was to reduce the bulk of imported products while maintaining their food value by eliminating water. This requirement has been met by work carried out at the Low Temperature Research Station, Cambridge, in cooperation with other institutions here and in the United States and the dominions. It is estimated that dehydration has saved shipping to the extent of 3,000,000 tons of water annually. A quart of milk has a volume of 69 cubic inches and weighs 41 ounces. Condensed, it has a volume of 27 cubic inches and weighs $16\frac{8}{10}$ ounces. Reduced to a powder it has a volume of $15\frac{9}{10}$ cubic inches and weighs $5\frac{3}{10}$ ounces. With the powder compressed into a block the volume is further reduced to $7\frac{7}{10}$ cubic inches. This discovery makes possible the preservation of rich spring and early summer milk for winter use.

Next year we shall import 100,000 tons of dried egg; the equivalent importation of egg in shell would amount to more than 500,000 tons and more than six times the shipping space. A similar saving is made by importation of dried meat. Another advantage is that dried egg and meat do not require refrigeration for transport or storing. Scientists here and in the dominions have cooperated to produce a method of shipping and storing butter without refrigeration. Butter consists of fat 82.5 per cent, water 16 per cent, milk solids 5 per cent and salt 1 per cent. Being perishable, it has to be frozen for transport and storage. By removing the water and nonfatty solids, a pure dry butterfat is obtained, which is relatively nonperishable, is not spoiled by microbes and will keep for months without refrigeration. Most of the nutritive value of butter lies in its calorific property, and the vitamins A and D are in the fat. In New Zealand and Australia butterfat is prepared by melting the butter and removing the water and fat by centrifugation. Here the butter can be reconstituted by churning in water, separated milk powder and salt. Summer butter, which has a higher nutritive value than winter, can thus be stored for winter use.

Meat, fish, spinach, onions and other foods can thus be reduced to hard blocks, which, when reconstituted by adding water and cooked, are indistinguishable from fresh food. These products have been found very useful for transport by the fighting forces, and the men like the food prepared from them. Trials have shown that they get more vitamin C from dried than from fresh cabbage. Though the war has brought about this new development, its advantages are so obvious that it must mark a permanent advance in our methods of dealing with food. Thus dried cabbage can be used in the dark winter months when fresh vegetables are scarce. Great care has been taken to ensure that the full nutritive value of dried foods is retained, and in general so also is their palatability.

A Nutrition Council: Postwar Relief of the Devastated Countries

The production and consumption of food during the war has been controlled by the government. The *Times* makes the proposal, which has received eminent medical support, that a nutrition council should be established to undertake systematically the work now done by a great number of committees and other authorities without any common plan or effective coordination. The council undertaking this work would con-

duct a continuous review of the state of nutrition in all the different sections of the population, ascertain where and in what respects it is satisfactory or deficient and advise the Ministry of Food on questions of diet. To obtain the greatest benefit from the organization which has been created and steadily improved during the war to provide and distribute as fairly as possible the food we need, it is essential to know what these needs are. We have rationing and price control, but these are only the final stages of operations extending over a wide field, agreements with the other countries, notably with the United States and the dominions, the stocking and storing of reserves and the control of home production, which now provides a much greater proportion of our food than would have been thought possible before the war. After three years, during which many of our principal sources of supply have passed under enemy control and our shipping has been attacked, we remain the best fed country in Europe. The work of the Ministries of Food and of Agriculture has been a definite success.

This machinery, created to meet the needs of war, cannot be allowed to lapse when peace is declared. There will be an uneasy transition period, perhaps for some years, before the nations can rely on an international economic system working with even tolerable smoothness. During that time shipments will have to be controlled to ensure the supply of necessary foods, and rationing will have to be maintained. To allow the use of the limited amount of shipping and foreign exchange available to be determined by the competition of importers guided solely by the profit motive and the price mechanism would impose intolerable strains on our shipping resources and the stability of the currency. Moreover the governments of the United Nations have responsibilities, which they do not wish to evade, toward the peoples of the occupied, looted and devastated countries. The duty of providing immediate relief as soon as the despoiler has been expelled has not been recognized only in words. Committees have been appointed to make the necessary arrangements to avoid disastrous delays, and large quantities of grain have been set aside for the purpose.

Hospital Priority for War Workers

There is a drive for war efficiency at Guy's Hospital. In the outpatient department the period of waiting to be seen, which sometimes is long, is shortened for war workers. When first seen in the front surgery a patient who is a war worker is given a distinguishing label which entitles him to be seen before all other patients excepting in acute emergencies. If he becomes an inpatient his stay in the hospital may not be prolonged for teaching purposes. Special measures have been taken to ensure that paronychia, injuries of the hand and the like which interfere with manual work receive expert treatment from the first. Thus there is a saving of man hours by shortening the period of disability. Previously the registrars may have been too busy with teaching to attend to such cases.

How Britain Has Stood the Air Raids

The calmness with which this country faces the greatest crisis in its history has been pointed out in previous letters. The absence of any disturbance of our mental poise is now shown by a report of Dr. Aubrey Lewis, clinical director and lecturer in psychiatry at the Maudsley Hospital, to the Medical Research Council, which has been published in the *Lancet*. An elaborate investigation of bombed areas throughout the country showed no striking increase in neurotic illnesses. Figures from hospitals and clinics suggested even a considerable drop. The impressions of good medical observers indicate a slight rise in neurotic illness after intensive raids, chiefly among those who have been neurotically ill before. Neurotic reactions may not appear for a week or ten days after the bombing. They usually clear up readily under rest and mild sedatives. The commonest forms of upset are anxiety and depression; hysteria is uncommon. In fire fighters and other workers in civil defense, neuroses are low. The number of cases of insanity has not increased. In Scotland suicide has actually diminished; figures for England are not yet available. There is no increase of alcoholism. No doubt the large scale evacuation from cities to be out of the reach of air raids has played some part in the diminution of neuroses.

Increase in Industrial Accidents

In a discussion on "The Personal Factor in Accidents," the Medical Research Council reports a great increase in industrial accidents during the war. In factories alone there were 232,000 accidents, of which 1,384 were fatal, in 1940, an increase over the preceding year of 39,000 accidents and 280 fatalities. The figures for 1941 have not yet been published. What increase in the accident rate these figures represent has not been stated. The increase is due in part to the larger number of persons engaged in war work and in part to the inexperience of a great many of them. The increase in accidents is out of proportion to the increase of persons employed. There is a tendency in some quarters to accept the increase as part of the war effort and to say that, as our fighting men are taking every risk, civilians should not bother about safety. But the chief inspector of factories points out that those men are carefully trained not to take unnecessary risks.

The longer working hours of wartime may be partially mitigated by rest pauses, by change of occupation, by sitting when possible and by adjusting benches and machines to the worker, so that the whole of his energy can be directed to his work and not to overcoming discomfort and unnecessary hindrances. It is important to avoid extremes of heat and cold and to have adequate ventilation. Lighting may be a cause of accidents if it is so inadequate that the worker cannot see his work clearly or if there is glare.

On the question of proneness to accidents it is stated that the majority are sustained by a small minority of workers. To remove these from a dangerous occupation would be the most effective way of dealing with accidents. Psychologic tests have been used to discover workers who are a danger to themselves and to others under certain conditions. For the keeping of accident records the card index system, in which there is a card for each worker, whether he has had an accident or not, is recommended. The best method for reducing accidents due to proneness would be to use tests, supplemented by the record of all accidents during an initial period, for every occupation in which there is special risk.

Prophylactic Tetanus Antitoxin for All Battle Casualties

The War Office has reminded medical officers that antitoxin should be given to all battle casualties, even though they have had tetanus toxoid in the past or tetanus antitoxin recently. It should also be given to patients suffering from any wound that seems likely to be infected with tetanus. When given subcutaneously the maximum level in the blood is not reached for three or four days, but by deep intramuscular injection the same level is reached much more rapidly. Deep injection into the deltoid, subscapular or outer quadrant of the gluteal regions should be the normal route. Intravenous injection is not recommended for prophylaxis because of the possibility of anaphylaxis. The minimum dose should be 3,000 units. For very foul lacerated wounds, this should be doubled or trebled. If there is documentary evidence of active immunization with toxoid, a single dose of antitoxin is sufficient. Otherwise two further doses of 3,000 units should be given at weekly intervals.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 31, 1942.

Sulfanilamide Therapy by Transthoracic Injection

Dr. Mariano R. Castex, head of the First Medical Clinic of the Faculty of Medicine of Buenos Aires, lectured in the Academia Nacional de Medicina of Buenos Aires. He reported the results of transthoracic intrapulmonary sulfanilamide injections, which he has employed in collaboration with Dr. Eduardo L. Capdehourat in the treatment of diffuse bronchopulmonary suppuration. The method is indicated in exceptionally rare cases. The authors observed that pulmonary suppuration which is not controlled by classic medical therapy is cured by nebulizations with sulfanilamide except in about 15 per cent of the cases, which are cured by transthoracic intrapulmonary sulfanilamide injections. The authors have resorted to this method for about one year in a group of 25 patients with bronchopulmonary suppuration of various types and for some patients with pulmonary tuberculosis with cavitation. The total number of injections of sulfanilamide and other substances administered to the group is about five hundred. The method of intrapulmonary injections of sulfanilamide is not a substitute for sulfanilamide nebulizations. The injections are administered during the acute period of suppuration, after which they are discontinued and nebulizations are given. At first, the authors used azosulfamide. Later on they used soluseptasine (a benzylsulfanilamide derivative), sulfathiazole or alcohol with azosulfamide. All drugs to be used by the intrapulmonary route should be well tolerated when they are intravenously administered. Transthoracic intrapulmonary sulfanilamide injections are indicated in acute suppuration of the whole pulmonary lobe or in suppuration with diffusion to the whole lung in which the clinical therapy fails and an operation is contraindicated. The method is contraindicated in cases of suppuration which is circumscribed to small zones of a lobe as well as in cases of suppuration in or near the hilar region (because of the danger of injuring the large vessels or nerves) and also in suppuration in zones near the heart and its vessels. The procedure, if performed properly, is not complicated by hemorrhage or by the spreading of the infection. Acute spasmodic cough and sometimes apnea appear immediately after the injection, then spontaneously and rapidly disappear. Bronchovesicular and bronchopulmonary reflexes can be prevented by giving a subcutaneous injection of neutral atropine sulfate fifteen minutes before the transthoracic injection. As soon as the liquid comes in contact with the pulmonary parenchyma a local burning pain is felt which spreads to the back and the neck and lasts for several hours or up to the following day. The body temperature rises to 104 F. and then subsides to normal. The injection does not provoke or increase dyspnea and cyanosis. In the larger number of cases twenty treatments with two injections for each treatment control the acute phase of the disease, after which the injections are discontinued and the nebulizations and other proper procedures are employed. The authors advise using this method in the treatment of other pulmonary conditions, such as gangrene of the lung.

Crusade Against Cancer

The center Sección de Neoplasias of the National Department of Hygiene was recently organized to carry on the necessary work for an early diagnosis of cancer, to establish in the country several centers for work against cancer, to stimulate research on cancer and to educate and advise the people on how to work and live in order to avoid the danger of cancerigenic substances (tar, paraffin, anthracene, carbon monoxide and tobacco). The center will prepare statistics of morbidity and mortality from cancer and will prohibit the sale of the so-called specifics against cancer. The Sección Neoplasias will organize a special department for biopsy and histopathologic examinations. Patients who are sent by physicians from remote provinces will receive immediate attention. There will be collaborating committees all through the country. Children of hospitalized parents will be cared for by persons appointed by the center as long as the parents need hospitalization.

Congress of Sanitation and Social Medicine

The second Argentine Congress of Sanitation and Social Medicine was held in Buenos Aires, July 8-11, under the auspices of the Federación Médica of Argentina. Dr. Victorio Monteverde is the president of the federation. The topics discussed were general sanitation and social medicine in the country. The reports presented were based on statistics of morbidity, mortality, infant mortality, regional diseases and regional mortality and mortality from infectious and contagious diseases in relation to sanitation. In preparing these reports special attention was given to the information from physicians who live in rural zones. There were also discussions on food and housing.

National Formulary in Peru

The minister of public health recently passed a law through which the national formularly of Peru will be edited. The Comisión Inspectora de Farmacias is in charge of editing the book. The members of the editorial committee are authorized to ask for the collaboration of the national institutions and technical national centers whenever they consider it advisable.

Clinical Laboratories in Chile

A law was recently passed in Chile by which chemical, biologic, serologic, citologic and histopathologic laboratories, either for private groups or for centers of public services, must have a license from the General Department of Public Health, and the head and personnel of the laboratories are required to have a certificate of competence.

One Woman Physician in Peru

There is only one woman physician in Peru, Dr. Mercedes Cisneros, who practices in Lima, whereas in Chile there is an Asociación Médica Femenina with three hundred members.

Marriages

PRENTISS MCLEOD KINNEY to Miss Mary Adelaide Smith, both of Bennettsville, S. C., in Battle Creek, Mich., recently.

EUSTON SPENCER ROBERTSON, Arlington, N. J., to Miss Elizabeth Tinsley of Bayonne at Tampa, Fla., July 29.

AUDREY JANE MCDONALD, Roodhouse, Ill., to Mr. James M. Ballowe of Chicago in Compton, Calif., September 18.

JAMES ODELL FIELDS to Miss Cecille Marie Williams, both of Milan, Tenn., at Corinth, Miss., August 29.

HERBERT CARLYLE SANDERSON, Vallejo, Calif., to Miss Gladys Louise Barton at San Francisco, August 28.

JOHN FRANKLIN REYNOLDS, Waterville, Maine, to Miss Jane Ann Loughland of Minneapolis, April 11.

RALPH VICTOR ELLIS to DR. ELIZABETH GREASON HUNTER LANGE, both of Minneapolis, August 31.

THOMAS MILTON MARSHALL, Frankfort, Ky., to Miss Nancye Miller of Hardinsburg, August 8.

CARL M. AUSTIN, Dallas, Texas, to Miss Lu Eva Sullivan of Mangum, Okla., August 12.

CLIFFORD B. COLE, Norman, Okla., to Miss Janice L. Beaghler in Yuma, Ariz., July 25.

GARVIN G. GOBLE to Miss Margaret Dinsmore, both of San Francisco, July 25.

DANIEL B. CORWIN to Miss Bella Beresofsky, both of New York, August 1.

Deaths

Allen Greenwood ✠ Boston; Harvard Medical School, Boston, 1889; professor of ophthalmology emeritus at the Tufts College Medical School; for many years lecturer on ophthalmology at the Harvard Medical School, Courses for Graduates; assistant instructor in ophthalmology at his alma mater, 1904-1905; member of the American Board of Ophthalmology; chairman of the Section on Ophthalmology of the American Medical Association, 1919-1920; member and past president of the American Academy of Ophthalmology and Otolaryngology, the New England Ophthalmological Society and the American Ophthalmological Society; member of the Association for Research in Ophthalmology, Inc.; fellow of the American College of Surgeons; veteran of the Spanish-American War; during World War I served in the Royal Army Medical Corps as an honorary lieutenant colonel with the British Expeditionary Forces in France, as a major and lieutenant colonel in the medical reserve corps of the U. S. Army, in the Surgeon General's Office at Washington, D. C., and as senior consultant in ophthalmology for the American Expeditionary Forces; received a citation from Gen. John J. Pershing for meritorious and conspicuous service; colonel in the medical reserve corps of the U. S. Army; member of the subcommittee on ophthalmology, general medical board, Council on National Defense, in 1917; bacteriologist for the board of health of Waltham, Mass., from 1894 to 1898; at one time special examiner for the U. S. Pension Bureau; consulting ophthalmic surgeon to the Massachusetts Eye and Ear Infirmary, Boston City and Beth Israel hospitals, Boston, the Milford (Mass.) Hospital and the Union Hospital, Framingham; visiting ophthalmic and aural surgeon Waltham (Mass.) Hospital; aged 76; died, October 23, in Miami, Fla.

John Albert Robison ✠ Chicago; Rush Medical College, Chicago, 1880; an Affiliate Fellow of the American Medical Association and member of the House of Delegates in 1912; formerly assistant professor of medicine at his alma mater; past president of the Illinois State Board of Health; chairman, examining committee, department of registration and education of Illinois for many years; organized the Chicago Society of Internal Medicine in 1901; president of the Chicago Medical Society, 1909-1910, chairman of the committee on publication in 1886 and a founder of the *Chicago Medical Recorder*, which published the society's proceedings for several years; served as a major in the medical reserve corps of the U. S. Army during World War I; attending physician, Central Free Dispensary, from 1880 to 1888; member of the staff of the Cook County Hospital from 1884 to 1892; formerly consulting physician to St. Joseph's Hospital; on the consulting staff and for many years attending physician and secretary of the medical board of the Presbyterian Hospital, where he died, October 18, of pneumonia, aged 87.

Samuel Poindexter Oast ✠ New York; University of Pennsylvania School of Medicine, Philadelphia, 1911; specialist certified by the American Board of Ophthalmology; assistant clinical professor of ophthalmology at the New York University College of Medicine; member of the American Academy of Ophthalmology and Otolaryngology and the American Ophthalmological Society; served during World War I; at one time associated with the U. S. Public Health Service; formerly ophthalmic surgeon to the New York Eye and Ear Infirmary and consulting ophthalmologist, U. S. Marine Hospital; aged 55; died, October 16, in Portsmouth, Va.

Edmund Louis Gros, West Chester, Pa.; Cooper Medical College, San Francisco, 1891; for many years chief of the American Hospital in Neuilly, France; an organizer of the Lafayette Flying Corps and Escadrille, famous organization of American volunteers in French aviation service; for his service to France was admitted to the French Legion of Honor; in 1919 was created Officer, for services with Liaison Section, Air Service, American Expeditionary Forces; in 1929 was made a Grand Officer of the Royal Order of Saint Saya by the late King Alexander of Yugoslavia; aged 73; died, October 16.

Isedor Mack Unger ✠ Ithaca, N. Y.; Bellevue Hospital Medical College, New York, 1898; past president of the Tompkins County Medical Society; veteran of the Spanish-American War and World War I; chairman of the Tompkins County Citizens Military Training Camp; consultant, Tompkins County Memorial Hospital; visiting physician, Cornell University Infirmary; colonel, medical officers' reserve corps, U. S. Army; chairman of the Five-County Medical Advisory Board number 41, New York Selective Service; aged 65; died, October 20.

James Augustine Cahill Jr. ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1915; professor and head of the department of surgery at his alma mater since 1933; specialist certified by the American Board of Surgery; served as a captain with the American Expeditionary Forces during World War I; consulting surgeon to the U. S. Public Health Service; chief surgeon at the Georgetown and Providence hospitals; consulting surgeon at the Columbia and Gallinger hospitals; aged 49; died, October 19.

William Hall Coon, Easton, Conn.; Bellevue Hospital Medical College, New York, 1897; member of the Connecticut State Medical Society; at one time health officer of Easton, Bridgeport, Conn., and Kansas City, Mo.; formerly representative in the state legislature and author of a bill establishing a commission, of which he was a member, to study the treatment and care of persons afflicted with mental or physical disabilities; veteran of the Spanish-American War; aged 67; died, September 30, of coronary thrombosis.

Charles Daniel Price, Whitesboro, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; member of the State Medical Association of Texas; past president of the Grayson County Medical Society; served for many years as a member of the board of education and as city health officer; for many years local surgeon for the Texas and Pacific Railway; aged 64; died, August 28, of pneumonia.

Lawrence Frank Eder ✠ Santa Barbara, Calif.; University of Minnesota Medical School, Minneapolis, 1924; president of the Santa Barbara County Medical Society; fellow of the American College of Surgeons; attending gynecologist and obstetrician, Santa Barbara Cottage, Santa Barbara General and St. Francis hospitals; affiliated with the Santa Barbara Clinic; aged 42; died, October 11, of pneumonia.

Samuel Jones Mattison ✠ Pasadena, Calif.; Northwestern University Medical School, Chicago, 1904; fellow of the American College of Surgeons; served overseas as a captain in the medical corps of the U. S. Army during World War I; on the staff of the Collis P. and Howard Huntington Memorial Hospital and St. Luke Hospital; aged 67; died, October 3, of arteriosclerosis and cerebral hemorrhage.

Harold Campbell Parsons, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1892; M.R.C.P., England, 1906; served with the Canadian Army Medical Corps during World War I; director of the chest clinics of the Toronto General Hospital and the Hospital for Sick Children; formerly consultant on the staff of the director of medical services for Canada; aged 73; died, October 15.

Gilbert Random Finch, Centerpoint, Ind.; Medical College of Ohio, Cincinnati, 1897; member of the Indiana State Medical Association; formerly served as county health officer and as secretary of the board of health of Centerpoint; served during World War I; aged 76; died, October 19, in the Clay County Hospital, Brazil, of cardiovascular renal disease.

James Hamlin MacIvor ✠ Port Jefferson, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1892; president of the medical board and chief of the staff of internal medicine at the John T. Mather Memorial Hospital; aged 70; died, October 15, in the Flower and Fifth Avenue Hospitals, New York.

William Northam Trader, Sonyea, N. Y.; University of Virginia Department of Medicine, Charlottesville, 1904; member of the Medical Society of the State of New York and the American Psychiatric Association; assistant medical superintendant of the Craig Colony; aged 65; died, October 11, of coronary thrombosis.

Elizabeth Anne Bergner ✠ Chicago; Rush Medical College, Chicago, 1930; on the staffs of the Swedish Covenant and Children's Memorial hospitals; formerly on the visiting staff of the Lewis Memorial Maternity Hospital; aged 46; died, October 26, in the Albert Merritt Billings Hospital of hepatitis.

Michael James McMahon, Buffalo; University of Buffalo School of Medicine, 1910; member of the Medical Society of the State of New York; served during World War I; on the staffs of the Mercy Hospital, Buffalo, and Our Lady of Victory Hospital, Lackawanna; aged 53; died, October 8.

Waverly Stafford Tucker, Newark, N. J.; Medical College of Virginia, Richmond, 1915; served in France with the American Expeditionary Forces during World War I; on the staffs of the Hospital of St. Barnabas and St. Michael's Hospital; aged 52; died, October 9.

Hugh Hill Dorr ✠ Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1909; chief medical examiner of the division of claims, state industrial commission; at one time on the staff

of the Athens (Ohio) State Hospital; aged 57; died, October 1, in the Mount Carmel Hospital.

Eugene E. Woodruff, Cooper, Texas; Memphis (Tenn.) Hospital Medical College, 1901; formerly a lawyer; member of the State Medical Association of Texas; past president of the Delta County Medical Society; aged 69; died suddenly, August 24, of heart disease.

Henry Wade Hopkins ✦ Warren, R. I.; University of Vermont College of Medicine, Burlington, 1902; organized and directed the medical division of the Warren civilian defense council; aged 67; died suddenly, October 14, in Burlington, Vt., of cerebral hemorrhage.

Vellora Meek Henry, New Wilmington, Pa.; Medical College of Ohio, Cincinnati, 1879; for many years a medical missionary in Assiut, Egypt; aged 88; died, October 3, of uremia and chronic interstitial nephritis in the Shadyside Hospital, Pittsburgh.

Homer Samuel Warren Jr., Chicago; University of Illinois College of Medicine, Chicago, 1922; member of the Illinois State Medical Society; aged 51; past president of the American Hospital, where he died, October 18, of carcinoma following x-ray burns.

James Clark Bennett Jr., Yonkers, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1890; also a lawyer; author of "Shedding the Years"; aged 76; died, October 10, in St. John's Riverside Hospital of carcinoma of the colon.

Clarence Araville Hercules, Harvey, Ill.; Northwestern University Medical School, Chicago, 1904; member of the Illinois State Medical Society; on the staff of the Cook County Infirmary, Oak Forest, for many years; aged 64; died, October 24.

David Newton Blakely ✦ Boston; Dartmouth Medical School, Hanover, N. H., 1896; assistant medical director of the New England Mutual Life Insurance Company; aged 75; died, October 15, of coronary thrombosis at his home in Brookline.

William Haley Kirk, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1891; member of the Medical Society of the State of Pennsylvania; for many years on the staff of St. Joseph's Hospital; aged 71; died, October 12.

William Carroll Barnett, Big Spring, Texas; St. Louis College of Physicians and Surgeons, 1893; served as county health officer for many years and as county treasurer from 1903 to 1906; aged 70; died, August 2, in a hospital at Dallas.

John Patrick Crotty, East St. Louis, Ill.; St. Louis University School of Medicine, 1934; at one time physician for the school board of East St. Louis; formerly district health officer; aged 33; died, October 8, at Tucson, Ariz.

John Q. Taylor, Paducah, Ky.; University of Louisville (Ky.) Medical Department, 1883; consulting surgeon and formerly assistant chief surgeon at the Illinois Central Hospital; aged 89; died, September 24, of arteriosclerosis.

Martha Elma Osmond ✦ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1898; physician at the Bryn Mawr College from 1899 to 1903; aged 79; died, October 15, of aortic and mitral insufficiency.

Arnold H. Johnson, Binghamton, N. Y.; Long Island College Hospital, Brooklyn, 1919; member of the Medical Society of the State of New York; aged 46; died, October 9, in the Binghamton City Hospital.

William Robert Bennett, San Antonio, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900; member of the State Medical Association of Texas; aged 69; died, October 15.

Charles W. Meckstroth, Brandon, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1895; for many years postmaster of Brandon and member of the school board; aged 70; died, October 4.

George Bancroft Maxwell ✦ Davenport, Iowa; Rush Medical College, Chicago, 1888; aged 77; on the staffs of St. Luke's Hospital and the Mercy Hospital, where he died, October 14, of uremia.

Alphons John Reiner, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1904; aged 62; on the staff of the Lankenau Hospital, where he died, October 4, of coronary occlusion.

Isaac Walter Lytle ✦ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; on the staffs of the Lankenau, Wills and St. Joseph's hospitals; aged 74; died, October 18.

Warren John Peters ✦ Allentown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1918; on the staffs of the Allentown and Sacred Heart hospitals; aged 50; died, September 27.

Luella Mary Masters, Thorntown, Ind.; Syracuse University College of Medicine, 1891; formerly a medical missionary in China; aged 81; died, October 7, in the Witham Memorial Hospital, Lebanon.

Ruth Hilliard, Newark, N. J.; Hahnemann Medical College and Hospital, Chicago, 1907; superintendent of the Essex County Parental School; aged 58; died, October 10, of uremia and encephalitis.

Delia Lucretia Chapin, Springfield, Mass.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; member of the Massachusetts Medical Society; aged 88; died, October 7.

Channing Elmer Wolfe ✦ Coon Rapids, Iowa; Northwestern University Medical School, Chicago, 1903; past president of the Carroll County Medical Society; aged 64; died, September 17.

Sara Meltzer, Winnipeg, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1924; aged 42; died, October 11, in the Winnipeg General Hospital of carcinoma of the breast.

Charles Joseph Overman ✦ Marion, Ind.; Medical College of Indiana, Indianapolis, 1896; on the staff of the Marion General Hospital; aged 76; died, October 3, of coronary thrombosis.

Earle A. Mowry ✦ Mexico, N. Y.; Syracuse University College of Medicine, 1904; mayor of Mexico; past president of the board of education; aged 66; died, October 12, of coronary thrombosis.

Casper Frank Melcher, South Bloomingville, Ohio; Eclectic Medical Institute, Cincinnati, 1895; aged 74; died, September 30, in the Cherrington Hospital, Logan, of coronary thrombosis.

Edward H. Bird, Dupont, Ohio; Columbus Medical College, 1887; member of the Ohio State Medical Association; aged 80; died, October 14, in the Lima (Ohio) Memorial Hospital.

Samuel Traner Buck, Philadelphia; Medico-Chirurgical College of Philadelphia, 1890; aged 73; died, August 21, in the Lankenau Hospital of hypertensive cardiovascular renal disease.

Charles W. Stegmenn, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1902; on the staffs of the Frankford and Children's hospitals; aged 61; died, October 4.

Chester P. Thompson ✦ Greenville, Miss.; Chicago College of Medicine and Surgery, 1914; on the staff of the King's Daughters' Hospital; aged 63; died, October 15, of myocarditis.

Vincent Frederick Keller, Chicago; Bennett Medical College, Chicago, 1913; aged 55; died, September 25, in the Veterans Administration Facility, Hines, Ill., of heart disease.

Joseph Edward Walther, Rushville, Ind.; Indiana University School of Medicine, Indianapolis, 1912; member of the Indiana State Medical Association; aged 59; died, August 28.

Enoch E. Long, Shoals, Ind.; Louisville (Ky.) Medical College, 1897; member of the Indiana State Medical Association; coroner of Martin County; aged 73; died, September 23.

Wallace Dickenson Wayne, Fayetteville, W. Va.; University of Louisville (Ky.) Medical Department, 1921; member of the Arkansas Medical Society; aged 47; died, October 8.

Randall Jackson Weber, Philadelphia; Medical College of Virginia, Richmond, 1905; member of the Medical Society of the State of Pennsylvania; aged 63; died, September 5.

DIED WHILE IN MILITARY SERVICE

William Henry Vail II, East Orange, N. J.; Columbia University College of Physicians and Surgeons, New York, 1939; in January 1942 was called to active duty as a first lieutenant in the medical reserve corps of the U. S. Army with St. Luke's Hospital Unit and was assigned to Fort Devens, Mass.; in June was transferred to the Army Air Forces at Westover, Mass.; aged 32; was killed in an airplane accident near Blairstown, September 19.

Correspondence

THE CAMPAIGN AGAINST DIABETES

To the Editor:—Your editorial of August 8 (The Journal, p. 1203) and the implication of its title, "The Harmlessness of Glycosuria for a Patient Treated with Protamine Zinc Insulin," at once made me worry. Since its appearance my anxiety has increased for fear the view expressed would encourage patients and doctors to relax in their endeavor to fight diabetes tooth and nail.

For the belief which is in me I thank Naunyn, whose conception of diabetes I consider the best expression of the clinical wisdom of the past; and for the present I would cite the experimental evidence of Lukens and Dohan, which in a way is a culmination of that astute observation years ago of F. M. Allen, recently evaluated, confirmed and further developed in England at the National Research Institute by Young, in the University of Toronto by Best and his associates, and in Philadelphia at the Cox Metabolic Institute.

The excerpt from Naunyn is rather long, but I hope you will print it in full, because I do not think it has ever appeared in English, although brief references to it are frequent. My translation may be crude, but it errs on the side of being literal.

From Naunyn (Der Diabetes Melitus, ed. 2, Vienna, Alfred Holder, 1906, pp. 390-391):

"In many cases of diabetes, glycosuria shows a decided tendency to progress. This can be the expression of the progress of a disease in an organ which is the cause of diabetes. For example, it is easily understandable in the case of the diabetes caused by pancreatic atrophy that, with the advancing degeneration of the organ, the glycosuria will become severer and ever more severe. There can further occur in the natural course of the disease, even in pure diabetes without the existence of any disease of an organ as a cause of the metabolic anomaly, a progressive development for the worse and, as a sign of it, a steady increase of glycosuria. But in the majority of cases the progressiveness of the glycosuria is only the expression of the bad influence which the glycosuria itself exerts on the tolerance.

"In its own time, it is true, the glycosuria will be determined by manifold external influences, and above all, in the first place, the responsibility for this rests on the nutrition—the diet.

"A more exact discussion and foundation for these remarks has been given in the chapter on glycosuria and in other parts of this volume. On these grounds it follows that each severe glycosuria in a diabetic patient always ought to be prevented, because earlier or later it will become ominous; where possible the glycosuria should be abolished on account of the favorable influence which the aglycosuric condition has on tolerance. Unconditionally this must be sought at the beginning of treatment, because in every case one must find out how much can be attained by this means.

"The desirability to commence to make the urine sugar free with such an experiment as the dietetic treatment of diabetes, by which alone the glycosuria can be overcome with surety, today ought scarcely to be earnestly gainsaid. This must therefore be done, because otherwise the degree of the patient's existing tolerance for carbohydrate can be seriously affected. On this rests the decision as to whether the case is to be classified as mild or severe and, moreover, on it, above all, the diagnosis of the case depends.

"It is of paramount importance for incipient cases that the diabetes immediately at its first appearance be so energetically treated that, if possible, the glycosuria will be abolished. I hold it from my experience very probable that, among those early, strictly treated, cases which in the beginning impressed one as severe but later ran a favorable course, is many a one for which one can thank this early, strenuous treatment; and, furthermore, on the other hand, there can be no doubt that in an overwhelming majority of the eventually severe, coursing cases are those which were subjected late if ever to energetic treatment. According to my view, one can with full justification talk about a 'habitualization' of diabetes, of the diabetic glycosuria, in the same sense in which for years the term has been applied to the habitualization of other functional disturbances, especially those of nervous origin, for instance epilepsy, convulsions and neuralgia; irrespective of what the cause may be, these conditions gain in strength and become more difficult to overcome the longer they last.

"The remarks made concerning laxity in dietetic therapy, however, must be somewhat more extensively emphasized because my point of view, based on the views first expressed, is today by no means universally accepted. I hold it for a pessimistic narrowing of the task laid on the physician in the treatment of diabetes if it is said that the essential task of the doctor is and remains to maintain the patient for a long time in an endurable condition of life. According to my point of view treatment includes a broader, more definite purpose, namely to strengthen (to improve) a disturbed function or at least to stop its further deterioration (the progressive development of the disease)."

My quotation from Lukens and Dohan is short, because the original article is easily available.

From Lukens and Dohan (*Endocrinology* **30**:175 [Feb.] 1942):

"In conclusion, we have noted the fact that pancreatic lesions are produced by partial pancreatectomy or pituitary extract only in association with hyperglycemia. In like manner, the recovery of the islands is coincident with the return of the blood sugar to normal levels prior to irreversible damage to the islands, whether this is accomplished by insulin, dietary treatment or phlorhizin. These findings support the hypothesis that the level of blood glucose is not only an index of the regulation of carbohydrate metabolism but also that it has, directly or indirectly, an influence on the islands of Langerhans. This influence is pathogenic when the blood sugar is high and beneficial when hyperglycemia is controlled, provided the lesions are not irreversible."

Elliott P. Joslin, M.D., Boston.

"TOXICITY OF HUMAN PLASMA"

To the Editor:—In your editorial "Toxicity of Human Plasma" (The Journal, September 19) reference is made to the case of severe reaction to lyophilized plasma reported by Polayes and Squillace (*ibid.*, March 28, p. 1050) and to work on dermal reactions to single type plasma performed by Levine and State (*Science* **96**:68 [July 17] 1942). The former authors attributed the reaction in their case to a fairly high titer of isoagglutinins in the plasma, and the latter believed the principal cause of skin sensitivity was the agglutinogen content.

Two objections may be raised to your summary of the suggested dangers. First, Levine and State's observations refer only to reactions of urticarial type, and no instance is reported of the important and really dangerous hemolytic reactions. Second, your last sentence, "since a negative skin test precludes the possibility of intravenous plasma shock," includes one assumption and one error; the assumption that this skin test-shock relation is really proved by the small group of observations reported, and the error in calling the observed reactions "plasma shock." Levine and State reported the occurrence of headache, dyspnea, epigastric distress, chills, fever and urticaria, and in subsequent work (The Journal, September 26) indicate that relief of the symptoms was obtained by intramuscular injection of epinephrine. To call such symptoms "plasma shock" gives them an erroneous weight. This is not to deny that it is worth while to trace the allergins responsible for such reactions and if possible eliminate them.

Careful inquiry into the allergic history of the donor, bleeding donors only in the fasting state, and pooling are recommended by the Subcommittee on Blood Substitutes of the National Research Council especially with this objective in mind. Pyrogenic substances in aqueous solutions, tubing and apparatus must also be excluded.

Skin testing is a simple procedure, but interpretation of the degree of reaction which is significant enough to contraindicate the use of a plasma transfusion is difficult. Reactions of urticarial type are seldom of such consequence as to outweigh the advantages of plasma transfusion in the treatment of shock, burns and hypoproteinemia, If plasma is really as life saving as has been demonstrated under war conditions, withholding it from 20 per cent (to take Levine and State's figures) of patients may be a serious step, not to be recommended in the light of our imperfect proof of the necessity for this privation.

LAWRENCE SOPHIAN, M.D., Staten Island, N. Y.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the Examining Boards in Specialties were published in THE JOURNAL, Nov. 7, page 788.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 15-16. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Dec. 16. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: * *Endorsement.* Hartford, Nov. 24. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, Nov. 23-24. Sec., Dr. William M. Rowlett, Box 786, Tampa.

HAWAII: Honolulu, Jan. 11-14. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO: Boise, Jan. 12. Dir., Bureau of Occupational Licenses, Mr. Walter Curtis, 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, Jan. 13-15. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KANSAS: Topeka, Dec. 8-9. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville March 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical.* Baltimore, Dec. 8-11. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 17-20. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MINNESOTA: * Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

NEBRASKA: * Lincoln, Nov. 23-25. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Deering G. Smith, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Bureau of Professional Examinations, Mr. H. L. Field, 315 Education Bldg., Albany.

NORTH CAROLINA: December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, December 2-4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, Dec. 9. Sec., Dr. J. D. Osborn, Jr., Frederick.

OREGON: *Written.* Portland, January. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Written.* Philadelphia, Jan. 5-7. *Bedside.* Philadelphia, Jan. 8-9. Act. Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, Department of Public Instruction, 358 Education Bldg., Harrisburg.

TEXAS: Austin, Dec. 28-30. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

UTAH: Salt Lake City, June. Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, March 25-27. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WISCONSIN: * Madison, Jan. 12-14. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Dec. 15. Act. Sec., Dr. Robert L. Nugent, University of Arizona, Science Hall, Tucson.

COLORADO: Denver, Dec. 16-17. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

IOWA: Des Moines, Jan. 12. Dir., Division of Licensure & Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, Feb. 12-13. Sec., Miss Elaine LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, Jan. 5-6. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEW MEXICO: Albuquerque, Feb. 1. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OKLAHOMA: Oklahoma City, May. Sec., Dr. Oscar C. Newman, Shattuck.

RHODE ISLAND: Providence, Nov. 18. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Sioux Falls, Dec. 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Milwaukee, Dec. 5. Sec., Prof. Robert N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Georgia June Report

The Georgia State Board of Medical Examiners reports the written examination for medical licensure held at Augusta, June 16-17, 1942. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Ninety-four candidates were examined, all of whom passed. Ten physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine		(1942)	1
Howard University College of Medicine		(1942)	1
Emory University School of Medicine		(1942, 42)	42
University of Georgia School of Medicine		(1942, 42)	42
University of Chicago, The School of Medicine		(1941)	1
Harvard Medical School		(1942)	1
University of Minnesota Medical School		(1920)	1
Columbia Univ. College of Physicans and Surgeons		(1939)	1
Cornell University Medical College		(1942, 2)	2
Meharry Medical College		(1942)	1
Universität Basel Medizinische Fakultat		(1936)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1926)	Wisconsin
Louisiana State University School of Medicine		(1940)	Louisiana
Tulane University of Louisiana School of Medicine		(1933)	Mississippi
Tufts College Medical School		(1919)	Maine
New York University College of Medicine		(1940, 2)	New Jersey
University of Oklahoma School of Medicine		(1936)	Oklahoma
University of Pennsylvania School of Medicine		(1936)	Penna.
University of Tennessee College of Medicine		(1922)	Tennessee
University of Wisconsin Medical School		(1930)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.
George Washington University School of Medicine		(1939)
Harvard Medical School		(1941)

Ohio July Report

The Ohio State Medical Board reports 31 physicians licensed to practice medicine by endorsement on July 21, 1942. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1917)	California
University of Colorado School of Medicine		(1937)	Colorado
Georgetown University School of Medicine		(1940)	N. B. M. Ex.
Emory University School of Medicine		(1939)	Georgia
Loyola University School of Medicine		(1935)	Illinois
Northwestern University Medical School		(1936)	Illinois
Rush Medical College		(1937)	W. Virginia
University of Illinois College of Medicine		(1927) (1928)	Illinois N. B. M. Ex.
Indiana University School of Medicine		(1938)	Indiana
State University of Iowa College of Medicine		(1936)	Iowa
University of Kansas School of Medicine		(1941)	Kansas
University of Louisville School of Medicine		(1940)	Kentucky
Louisiana State University School of Medicine		(1939)	Louisiana
Johns Hopkins University School of Medicine		(1934)	N. B. M. Ex.
Harvard Medical School		(1939)	Mass., (1941) N. B. M. Ex.
University of Michigan Medical School		(1940)	Michigan
St. Louis University School of Medicine		(1941)	Missouri
Cornell University Medical College		(1937)	N. B. M. Ex.
University of Buffalo School of Medicine		(1941)	N. B. M. Ex.
Duke University School of Medicine		(1939)	N. B. M. Ex.
University of Oregon Medical School		(1931)	Oregon
Hahnemann Medical College and Hospital of Philadelphia		(1932)	Penna.
Jefferson Medical College of Philadelphia		(1937)	Penna.
University of Pennsylvania School of Medicine		(1918)	N. B. M. Ex.
Woman's Medical College of Pennsylvania		(1924) (1939)	Penna., N. B. M. Ex.
University of Vermont College of Medicine		(1912)	Maine
Marquette University School of Medicine		(1940)	Wisconsin
McGill University Faculty of Medicine		(1940)	N. B. M. Ex.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Failure to Perform Operation to Reduce Fracture.—The plaintiff broke his leg and engaged the defendant physician to treat him. The physician's effort to reduce the fracture was without success. In a subsequent suit for malpractice against the defendant, the plaintiff alleged that the physician negligently, carelessly and unskilfully employed the wrong method of treatment for a period of eight weeks in that instead of operating he merely attached weights to the leg which failed to bring about a proper reduction of the fracture. The defendant contended that he had many times during the treatment advised the plaintiff that an operation on the leg was necessary in order to obtain a good result, that the plaintiff consistently refused to permit the defendant to operate and that if there was a bad result that refusal was the direct cause of it. The evidence showed that, after remaining under the defendant's care for several months, the plaintiff subsequently went to St. Louis where an operation was in fact performed on his leg with good results. The plaintiff's evidence, in part, consisted of the defendant's deposition in which the defendant admitted that he had told the plaintiff that a satisfactory result could not be obtained by using the traction method alone. At the close of the plaintiff's case the trial court directed a verdict for the defendant, and the plaintiff appealed to the Supreme Court of Missouri, division No. 2.

The sole question before the court was whether or not the plaintiff had made out a case which should have been submitted to the jury. In the opinion of the court he had. The defendant's answer and his deposition constituted an admission that he had used a method of treating the plaintiff's leg which he knew at the time was not proper and would not bring about a satisfactory result. The plaintiff, as well as his father, denied any refusal to submit to an operation as claimed by the defendant and denied that the defendant at any time suggested an operation as alleged in his answer and deposition. Whether or not the plaintiff refused to submit to an operation and whether the defendant advised such an operation were, said the court, questions for a jury to decide.

The defendant urged that since the plaintiff introduced the defendant's deposition in evidence he was bound by the testimony contained in it and that therefore his case must fail. With this contention the court could not agree. The deposition contained damaging admissions and the plaintiff had a right to introduce it for the purpose of aiding his case. If the evidence of the defendant contained in the deposition as to his advice to the plaintiff to submit to an operation and as to the plaintiff's refusal had been the only evidence on that point, the plaintiff would have been bound by it. But the plaintiff himself denied that he refused or that the physician advised the operation. While a party, said the court, may not directly impeach his own witness, it does not follow that he cannot introduce other evidence, if of independent probative force, even though it is contradictory of what the witness said.

The defendant argued that the plaintiff introduced no expert evidence to prove that the defendant had been negligent in using a skeletal traction method in lieu of an operation and that he had the right, under the circumstances, to use his own best judgment as to the method of treatment. The defendant's own evidence, the court pointed out, was that he used a method which he knew was not practical under the circumstances and would not accomplish a satisfactory result. A dozen expert witnesses could not have added much to that. Expert evidence is not always essential in malpractice cases to make an issue for a jury.

The judgment in favor of the defendant was therefore reversed and the cause remanded for trial.—*Richeson v. Roebber, 159 S. W. (2d) 658 (Mo., 1941).*

Hospitals: Exclusion of Practitioners.—The plaintiff had been engaged in the practice of medicine for many years and had, apparently, been utilizing the facilities of the defendant hospital. In 1939 he was notified by the superintendent of the hospital that in order for the hospital to remain on the accredited list of the American College of Surgeons it would be necessary for him to obtain the indorsement of the proper board of officers of that organization. The underlying reason for this notification, according to the record, was that the plaintiff, who was described as a general practitioner, had performed certain operations which under the rules could be performed only by specialists and that a continuation of this practice would result in removal of the hospital from the accredited list. The plaintiff filed suit to restrain the defendant hospital from interefering with his practice and obtained a temporary restraining order. Subsequently the trial court dissolved the temporary injunction and denied a permanent one, and the plaintiff appealed to the Court of Appeals of Kentucky.

One issue raised in this case was whether the defendant hospital was a public or a quasipublic institution. The court held that it was neither, citing with approval the case of *Van Campen* v. *Olean General Hospital,* 210 App. Div. 204, 205 N. Y. S. 554, where it was said:

> There are many public institutions in this state, devoted to the care of afflicted and unfortunate people. They may be conducted directly by the state, or they might be made by statute corporate bodies. . . . Corporations organized by permission of the Legislature undertake to perform similar duties. . . . These are private corporations. That they are engaged in charitable work for the benefit of the public, and thereby affected with a public interest, does not make them public corporations. . . . The fact that they may receive a donation from the government to enable them to carry on their work, or funds from a city or county to care for sick, disabled indigent persons, . . . does not affect their character as private institutions.

The second issue before the court was whether or not the plaintiff had a vested right to use the operating room of the hospital in his private practice. Quoting from an annotation in 60 A. L. R. 657, the court said: "Although there are comparatively few cases on the subject under annotation it seems to be the practically unanimous opinion that private hospitals have the right to exclude licensed physicians from the use of the hospital, such exclusion resting within the sound discretion of the managing authorities." The high standing of the physician, the court pointed out, was not at all questioned in this case. He had, the record showed, been successful. The court said, however, that it had only one question before it—the vested right of the plaintiff to operate in the rooms of the defendant hospital when the hospital for no manifested arbitrary or capricious reason, but in the exercise of a reasonable discretion to maintain its institution on an accredited basis, decided otherwise. In the opinion of the court, the plaintiff failed to demonstrate that he had such a vested right, either by contract, inherently or as vouchsafed by any constitutional provision. Accordingly the judgment of the lower court dissolving the temporary restraining order and denying a permanent injunction was affirmed.—*Hughes v. Good Samaritan Hospital, 158 S. W. (2d) 159 (Ky., 1942).*

Society Proceedings

COMING MEETINGS

American Society of Anesthetists, New York, Dec. 10. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.

Annual Conference of Secretaries and Editors of Constituent State Medical Associations, Chicago, Nov. 20-21. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

Annual Forum on Allergy, Cleveland, Jan. 9-10. Dr. Jonathan Forman, 956 Bryden Rd., Columbus, Ohio, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 11-13. Dr. E. Martinez Rivera, P. O. Box 3866, Santurce, Secretary.

Radiological Society of North America, Chicago, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 5. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Society of American Bacteriologists, Columbus, Ohio, Dec. 28-30. Dr. W. B. Sarles, Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Journal of Experimental Medicine, New York

76:221-320 (Sept.) 1942

Action of Extreme Cold on Leukemic Cells of Mice. C. Breedis, New York.—p. 221.

Studies on Nutrition of Hemophilus Influenzae: I. Relationship Between Utilization of Coenzyme and Hemin and Reduction of Nitrate. C. L. Hoagland, S. M. Ward, Helena Gilder and R. E. Shank, New York.—p. 241.

Reciprocal Transmission Tests with Infectious Catarrh of Chickens, Mice and Rats. J. B. Nelson, Princeton, N. J.—p. 241.

Experimental Infection of Chick Embryo with Virus of Pseudorabies. F. B. Bang, Princeton, N. J.—p. 263.

Studies in Pathogenesis of Experimental Dysentery Intoxication. A. Penner and Alice Ida Bernheim, New York.—p. 271.

*Hemoglobin Production Factors in Human Liver: Anemias, Hypoproteinemia, Cirrhosis, Pigment Abnormalities and Pregnancy. G. H. Whipple and Frieda S. Robscheit-Robbins, Rochester, N. Y.—p. 283.

Generalized Visceral Disease of Guinea Pigs, Associated with Intranuclear Inclusions. A. M. Pappenheimer and C. A. Slanetz, New York.—p. 299.

Studies Concerning Site of Renin Formation in Kidney: III. Apparent Site of Renin Formation in Tubules of Mesonephros and Metanephros of Hog Fetus. A. Kaplan and M. Friedman, with technical assistance of Eleanor Williams, San Francisco.—p. 307.

Hemoglobin Production Factors in Human Liver.—Whipple and Robscheit-Robbins analyzed the stores of hemoglobin producing materials in animal and human livers, believing that this knowledge would make for better therapy in man. Normal human liver tissue as compared with that of the normal control animal contains more hemoglobin production factors—a biologic assay ratio of 120 to 160 per cent. Acute and chronic infections do not modify these values. In pernicious and aplastic anemia there are large liver stores of hemoglobin producing factors—a biologic assay ratio of 200 to 240 per cent. Therapy in pernicious anemia reduces these stores as new erythrocytes are formed. Secondary anemia presents a low normal or subnormal liver store of hemoglobin producing factors—an assay of 60 to 130 per cent. Hemochromatosis, erythroblastic anemia and hemolytic icterus in spite of large iron deposits in the liver usually show a near normal biologic assay. Polycythemia shows low reserve stores of hemoglobin producing factors and leukemias a wide range. Hypoproteinemia almost always is associated with low reserve stores—biologic assays of 60 to 80 per cent. In pregnancy, eclampsia and lactation there may be subnormal liver stores of hemoglobin producing factors. Exhaustion of protein stores lowers the barrier to infection and renders the liver susceptible to many toxic substances. Hypoproteinemia under these conditions should be corrected and the patient relieved of a real hazard.

Missouri State Medical Assn. Journal, St. Louis

39:273-300 (Sept.) 1942

*Hyperparathyroidism: Sixty-Seven Cases in Ten Years. O. Cope, Boston.—p. 273.

Protrusion of Nucleus Pulposus and Other Causes of Lumbosacral Nerve Root Pain. C. Pilcher, Nashville, Tenn.—p. 279.

Free Omental Graft: Clinical and Experimental Study. J. L. McGehee, Memphis, Tenn.—p. 284.

Military Demands on Cardiovascular System. G. Herrmann, Galveston, Texas.—p. 287.

Hyperparathyroidism.—Cope reports the 67 cases of proved hyperparathyroidism seen at the Massachusetts General Hospital to emphasize the productivity of painstaking diagnosis and planned surgery. Hyperparathyroidism is primarily a disease of disordered metabolism of calcium and phosphorus and is not a bone disease. Bone changes are secondary to the disordered metabolism. Recognition of this fact has resulted in the unprecedented number of proved cases. Bones are not involved in mild cases or in cases of severe disease in which the intake of calcium has been adequate. Until the profession realizes this secondary relation of the bone disease, most cases will remain undiagnosed. Any person presenting calcification in the urinary tract or a history of having passed a stone should be suspected of having the disease. Between 10 and 15 per cent of such persons were proved to have hyperparathyroidism. In the last two years the disease was proved in 4 such persons in whom previously the diagnosis had been excluded on the basis of insufficient data. The fasting blood levels of calcium and phosphorus must be checked by experienced laboratory technicians. To evaluate the calcium level the serum protein must be measured; the total blood calcium is composed of bound protein and ionized calcium. Only the latter is elevated in hyperparathyroidism. A persistent low phosphorus level is diagnostic even in the absence of an elevated serum calcium level, provided the urinary excretion of calcium is increased. In women there may be a cyclic variation in the excretion of calcium through the kidneys. Of the three forms of treatment suggested (medical, radiation and surgical) only the surgical is effective. Surgery must be precise to meet the challenge of the diagnostician. The problem involves the site and the size of the tumor. The parathyroids lie not only in the neck around the thyroids but also in the mediastinum. The parathyroids, adenomatous, hyperplastic and uninvolved glands of the 67 patients, were found all the way from the larynx to the heart. This widespread distribution is due to the embryology of the glands. The surgeon must recognize five types of glands: the normal, the adenomatous, the hyperplastic, the secondarily hyperplastic due to a primary renal disease or vitamin D deficiency and the "uninvolved" glands. When a hyperplastic gland is discovered, all four parathyroids must be found and a subtotal parathyroidectomy done. Total removal of three and subtotal resection of the fourth usually is indicated. When an adenoma is disclosed, the surgeon must decide whether further search should be made; 5 of the author's patients had two adenomas. The decision is made on the basis of the size of the adenoma and the degree to which the blood calcium level is elevated. The higher the calcium, the greater the weight of parathyroid tissue to be found. An uninvolved gland should never be resected.

New England Journal of Medicine, Boston

227:241-276 (Aug. 13) 1942

Diagnosis of Allergic States in Selectees. R. W. Hyde, Boston.—p. 241.

*Ascorbic Acid Deficiency Associated with Gastric Lesions. C. C. Lund, Boston.—p. 247.

Practical Psychiatry with Adolescents: III. Technic of Psychotherapy for the General Practitioner. D. J. Sullivan and O. Billig, Asheville, N. C.—p. 253.

Kidney Disease. R. Fitz, Boston.—p. 262.

Ascorbic Acid Deficiency and Gastric Lesions.—Lund shows that patients with gastric lesions commonly have ascorbic acid deficiency not because of any direct metabolic effect of the disease but purely because of deficient dietary intake of the vitamin. He made an attempt to estimate tissue reserves of the vitamin. These reserves are what is probably important in the healing of the wound rather than the output in the urine or the amount in the blood plasma, both of which may be affected by changes much more rapidly than the reserves are. It was hoped that by focusing attention on the reserve a better understanding of the problem might be secured. The author discusses the taking of a dietary history and the determination of vitamin C in the blood plasma and in the white blood cells. The estimate of ascorbic acid reserves is made on the basis of all the data available in each case. In all cases except case 1 there was evidence of at least two of the following kinds: history, simple plasma determination, simple white cell determination and determination of plasma or white cells after test doses. When diet or simple plasma or white cell determinations were the only data available, the reserve was taken at the level suggested by the one that indicated the position nearest to its normal. If determinations were made after test doses or treatments, the results of these tests were made the basis of the estimate, as follows: if the plasma value was found to be 1 mg. per hundred cubic centimeters the morning after a dose of

1 Gm. of ascorbic acid, the value was entered as 75 per cent because, no matter what the original plasma determination showed, the reserve could not have been appreciably lower than this; on the other hand, if the plasma determination was still 0 mg. after three daily doses of 1 Gm. the reserve was entered as 0. Other results were entered at intermediate levels depending on the best estimate of the reserve. Tables indicate data obtained. Few of 45 patients who underwent operations for gastric lesions had a normal ascorbic acid intake, plasma level, white cell level or reserve. A few patients had such low reserves that they must have been close to scurvy. The greatest number of patients had from 20 to 50 per cent of normal reserves. When nonradical operations were performed, more complications and deaths occurred among patients with low reserves than among those with high reserves. No more complications or deaths occurred among patients with low ascorbic acid reserves after radical gastric operations. It is suggested that more and better vitamin treatment is indicated in cases coming to gastric surgery.

227:277-324 (Aug. 20) 1942

*Surgical Treatment of Severe Orchitis in Mumps. C. Wesselhoeft and S. N. Vose, Boston.—p. 277.
*Eclampsia. K. W. Sewall, Boston.—p. 281.
Diabetes Insipidus and Pregnancy: Report of Two Cases. H. Blotner and P. Kunkel, Boston.—p. 287.
Military Dermatology. C. G. Lane, Boston.—p. 293.

Surgical Treatment of Severe Orchitis in Mumps.—Wesselhoeft and Vose maintain that, although mumps is manifested by a parotitis in the vast majority of cases, the parotids may show no swelling, and the submaxillary and sublingual glands may take the brunt of the attack. Involvement of the salivary glands may follow other manifestations of the disease. Thus an orchitis, a pancreatitis or an encephalitis may precede, accompany or follow the parotitis. The only manifestations of mumps may be in one of these organs remote from the salivary glands. Here the diagnosis is based on the circumstantial evidence of exposure, the incubation period of approximately eighteen days and the course pursued. Orchitis rarely occurs before the age of puberty. At and above that age its incidence in mumps is 18 per cent. The virus of mumps may invade the seminiferous tubules of the testis, the epididymis and the vas deferens in varying degrees of severity, either simultaneously or separately. Moreover, in rare cases the prostate and the seminal vesicles may also be involved. At the onset of orchitis the scrotal wall is thin, so that one can easily palpate the testis and any enlargement of the epididymis. If the testis does not yield to pressure, presents a stonelike hardness and is very tender it is wise to operate without further delay. The rationale of incising the tunica albuginea in severe orchitis is comparable to that of paracentesis of a bulging, painful drumhead in otitis media. The operation must be done early enough to avoid pressure necrosis in the testis. It is useless to operate when the process is already on the wane. Early operation relieves pain, reduces the fever and avoids atrophy. It is not indicated in mild cases or in those in which an epididymitis predominates. An enlarged, hard, tender testis, with chills and fever, constitutes the indication for surgical intervention. Nitrous oxide and oxygen is the anesthetic of choice. The end results of 10 cases are presented. Moderate atrophy took place in the case in which operation was done too late. In the others there was immediate relief, and no atrophy was apparent at follow-up examination. Fourteen cases of mild orchitis were observed during this period. The patients were not operated on. A follow-up examination on 10 of these revealed no atrophy. The expected incidence of atrophy after mumps orchitis without surgical intervention is 54.7 per cent. The authors' experience suggests that atrophy occurs only after severe cases and that an early operation prevents atrophy.

Eclampsia.—Recent theories on the etiology of eclampsia indicate that, whatever the cause, eclampsia affects first, or even arises from, the placenta. The chief pathologic damage is to the vascular system. It may have an endocrine origin. Sewall discusses the physiologic and cellular pathology of eclampsia and stresses the damage caused to the vascular system. At the Massachusetts Memorial Hospitals from Jan. 1, 1923 to Nov. 1, 1941 there were 55 cases of eclampsia among 22,089 hospital and district deliveries, an incidence of 0.249 per cent, or 1:402. There were 12 maternal deaths, a mortality of 22 per cent. Among the fatal cases there were 2 vaginal sections, 1 classic cesarean section, 1 manual dilation and 1 high forceps delivery of a large baby through a generally contracted pelvis—this last patient, an emergency case, entered the hospital fully dilated and had several convulsions before and after delivery. Four patients died undelivered, 1 died of general peritonitis after a spontaneous delivery following artificial rupture of membranes to induce labor, and 2 died after normal deliveries following conservative treatment. From 1923 through 1931, when operative deliveries were prevalent, there were 32 cases of eclampsia and 9 deaths, a mortality of 28 per cent. Since then the treatment has been conservative and there have been 23 cases of eclampsia and 3 deaths, a mortality of 13 per cent. Veratrum viride was used at the Massachusetts hospital in 1912 and 1913. It was discontinued because it did not seem to give improved results. However, in those years obstetric treatment was radical, including accouchement forcé, and little or no treatment for shock; moreover, without intravenous magnesium sulfate therapy it is difficult to see how any medical treatment could have had a fair trial. Workers at the Cincinnati Hospital using veratrum viride, intravenous magnesium sulfate, concentrated dextrose solutions, sedatives only for extreme restlessness and labor and, rarely, morphine have treated 120 consecutive cases of eclampsia with 2 deaths, a mortality of less than 2 per cent, which is remarkable. Veratrum viride should be used with great caution. Until results are obtained from others who are now using the drug according to the routine of Bryant and Flemming, it should not be routinely employed.

New York State Journal of Medicine, New York

42:1599-1694 (Sept. 1) 1942

Urinary Suppression Due to Sulfathiazole. C. G. Bandler and M. Bruger, New York.—p. 1627.
Therapeutic Procedures in Bronchial Asthma. W. C. Spain, New York.—p. 1631.
Respiratory Derangement During Anesthesia. C. L. Burstein, New York.—p. 1638.
Infantile Paralysis: Importance of Treatment in Acute Stage. Elizabeth Kenny, Minneapolis.—p. 1645.
Role of Orthopedic Appliances in Treatment of Infantile Paralysis. H. H. Jordan, New York.—p. 1651.
Anxiety States Arising in Naval Personnel—Afloat and Ashore. S. M. Davidson.—p. 1654.
*Common Masquerading Lung Disease. R. H. Overholt, Boston.—p. 1657.
Report on Results of Electric Shock Treatment on Mental and Emotional Symptoms. F. Kennedy and B. Wiesel, New York.—p. 1663.

Common Masquerading Lung Disease.—Primary carcinoma of the lung involving one part of a branching bronchial system may masquerade under various guises. The presenting symptoms and one that caused the patient to seek help among 153 encountered by Overholt within the last ten years were cough in 124, chest pain in 65, chills and fever in 60, hemoptysis in 55, dyspnea in 52, loss of weight in 51, weakness in 41, wheezing in 10, gastrointestinal upsets in 9 and arthritis in 4. The original diagnosis in 95 was tuberculosis, unresolved pneumonia, pulmonary abscess, bronchitis, asthma, heart disease, pleurisy or a malignant neoplasm. In most instances the primary pathologic process failed to produce its shadow in the roentgenogram or on the fluoroscopic screen. The changes observed were secondary effects and these were of a highly variable nature. The great roentgen variation is due to the fact that the disease is one involving one part of a branching bronchial system. The disease masqueraded for almost a year before the true diagnosis was established. The method of establishing the diagnosis in the 153 cases was by bronchoscopy in 63 per cent, surgical exploration in 24 per cent, biopsy in 6 per cent, aspiration in 2 per cent and necropsy in 5 per cent. It is significant that this internal cancer is strategically located and is within the range of bronchoscopic vision and accessible for biopsy in most cases, which method may be used even in the earliest stages of the disease and before the lesion is large enough to produce bronchial occlusion with telltale atelectatic signs on the roentgenogram. Of the 153 patients surgical intervention was offered to only 75; 37 were in a hopeless condition, 8 had palliative resection and 30 had curative resection. Eighteen of the 30 are living, 4 having survived for more than five years and

14 for less than five years. Cancer of the lung is now one of the most challenging and important diseases of the chest in patients 40 to 65 years of age, particularly men. Many patients ask for help at a time when the lesion is still confined to the lung. It need not be a masquerading disease. It is too common to be forgotten. Early discovery in many cases will be rewarded by a reasonably good chance of cure.

Radiology, Syracuse, N. Y.

39:127-252 (Aug.) 1942

Roentgen Therapy in Management of Some Nonmalignant Diseases Affecting Organs of Female Pelvis. B. H. Orndoff, Chicago.—p. 127.
Radiation in Cancer of Corpus Uteri. I. I. Kaplan, New York.—p. 135.
*Study of Radiologic Treatment of Cancer of Cervix. M. C. Reinhard, H. L. Goltz and B. F. Schreiner, Buffalo.—p. 144.
Diseases of Lesser Circulation. F. L. Chamberlain, San Francisco.—p. 151.
Faulty Movements of Diaphragm as Cause of Nonobstructive Emphysema and Angina Pectoris. W. J. Kerr, San Francisco.—p. 153.
Studies of Pulmonary Vessels by Means of Body Section Radiography. W. G. Scott and J. R. Lionberger Jr., St. Louis.—p. 157.
Acquired Subtentorial Pressure Diverticulum of Cerebral Lateral Ventricle. C. G. Dyke, New York.—p. 167.
Tumors of Urinary Bladder. W. Hiemstra and C. D. Creevy, Minneapolis.—p. 175.
Effect of Combined Fever and X-Ray Therapy on Far Advanced Malignant Growths. H. S. Shoulders, E. L. Turner, L. D. Scott and W. H. Grant, Nashville, Tenn.—p. 184.
*Blood Findings in Cyclotron Workers. S. Warren, Boston.—p. 194.
Pyloric Ulcers. M. I. Smedal, Boston.—p. 200.
*Incidence of Multiple Primary Tumors and Problem of Acquired Cancer Immunity. E. A. Schmidt, Denver.—p. 208.
Argentaffin Tumors of Small Bowel: Roentgen Sign of Malignant Change. E. R. Miller and W. W. Herrmann, San Francisco.—p. 214.
Perforation of Peptic Ulcer. M. H. Poppel and Celia Bercow, New York.—p. 221.
Osteoid-Osteoma of Astragalus: Case Report. T. Horwitz, Philadelphia.—p. 226.

Roentgen Treatment of Cancer of Cervix.—Of 557 patients with group 1, 2 and 3 cancer of the cervix treated from 1931 to 1935, 72, 48 and 38 per cent respectively survived for five years with all types of treatment. When Reinhard and his associates correlate the five year survival of 457 of the patients on the basis of treatment, they find that of 227 receiving primary irradiation (one or two small doses of 200 kilovolt x-rays, having a half value layer of 0.9 mm. of copper, delivered anteriorly and posteriorly through 20 by 20 cm. ports at a skin-target distance of 80 cm.; insertion of radium tubes of 100 to 200 mg. radium content with 1 mm. of platinum and 1 mm. of steel filtration in the uterine canal and gold radon seeds with 0.3 mm. of gold filtration in the cervix and palpable part of the tumor) and of 230 who received supplementary (protracted irradiation either from radium packs or 200 kilovolt x-rays, radium tubes and seeds or any combination of these) in addition to the primary irradiation, the survival percentages for the three clinical groups of cancer were respectively 97, 66 and 57 for the 227 and 66, 40 and 31 for the 230 patients. The definite difference in the survival rate following the two types of treatment may be due to several individual or a combination of factors: extent of the disease, biologic variation in the disease and the patient, age of the patient and supralethal influence of additional radiation. A study of these factors failed to show that any of them but age had any influence. A better survival was associated with the older age groups. Isodose and dosage distribution curves show a steep gradient, from 2 to 5 cm. lateral to the midline, which is reflected in the progressively poorer survival with increased spread of the disease. Doses at the 2 cm. mark, within a range of 4,000 to 8,000 roentgens of primary radiation only, produced a 75 per cent five year survival free from disease of patients with group 1 and 2 cancers and a 55 per cent survival free from disease of the group 3 patients. Because of the poorer survival of group 3 patients, in whom the disease has presumably spread to regions receiving lower doses, it would seem reasonable to conclude that the dose to the lateral portions of the pelvis should have been increased. Of those patients with all three groups of cancer receiving supplemental irradiation the highest survival followed doses of less than 2,000 roentgens in addition to the primary irradiation.

Blood Findings in Cyclotron Workers.—Warren determined the blood counts and hemoglobin levels for three to thirty months of 85 persons exposed to slight radiation from cyclotrons and temporarily radioactive isotopes. Most persons under these conditions had no significant changes that were not explained by intercurrent disease. In 4 there were minor variations in the leukocyte count. As with exposure to roentgen or radium radiation, a transient depression in the leukocyte count was followed by an elevation. This change occurred more rapidly in lymphocytes than in granulocytes. Persons with an unstable bone marrow when subjected to only minor exposure to radiation should not work where they are exposed to radiation.

Multiple Primary Tumors.—Among 3,700 consecutive necropsies, 42 examples of multiple independently developing primary tumors were recorded. An analysis by Schmidt shows that in 38 there were two tumors and in 4 three tumors. A combination of two benign tumors was seen only twice, a combination of a benign and a malignant tumor twenty-seven times, two benign tumors and one malignant tumor three times, two independent malignant tumors nine times and two primary malignant tumors and a benign tumor once. The ratio of a benign-malignant to a malignant-malignant combination is about 3 to 1, as compared to 6 to 1 reported by Egli in 1914 and 25 to 1 by Puhr in 1927. The explanation for the higher ratio probably lies in the inclusion of brain tumors, previously less frequently diagnosed. Of the 42 cases 24 were observed roentgenologically. The relative rarity of multiple primary malignant tumors may be due to the fact that in most of these subjects the remaining span of life for the development of additional neoplasms is definitely limited, to diagnostic limitations in the living patient and at necropsy and to the fact that tumor resistance or tumor immunity may be produced by the first tumor. It seems probable that elements of immunity and tumor resistance play a part in man as they do in animals. Spontaneous cures of undoubted malignant neoplasms have been reported occasionally and so has the unpredictably different course in certain apparently analogous cases. Acquired immunity may at some future time play an important part in the war against tumor and malignant growth.

Rhode Island Medical Journal, Providence

25:173-188 (Aug.) 1942

Atherosclerosis—Its Causes. T. Leary, Boston.—p. 173.
Phenol-Camphor Dermatitis. F. Ronchese, Providence.—p. 176.

Southern Medical Journal, Birmingham, Ala.

35:789-868 (Sept.) 1942

*Gas Gangrene: Experimental Observations on Use of Sulfonamide Derivatives and Zinc Peroxide in Its Treatment and Prevention. G. A. Caldwell and F. J. Cox, New Orleans.—p. 789.
Rebreathing in Anesthesia. J. Adriani, New Orleans.—p. 798.
Continuous Spinal Anesthesia. W. C. Schaerrer, Kansas City, Mo.—p. 804.
X-Ray Therapy in Superficial Infections. C. M. Hamilton, Nashville, Tenn.—p. 808.
Contact X-Ray Therapy. W. L. Kirby, Winston-Salem, N. C.—p. 809.
Subacute Catarrhal Otitis Media and Mastoiditis with Effusion: Symptom and Clinical Entity. J. M. Robison, Houston, Texas.—p. 815.
Diagnosis and New Treatment of Traumatic Rupture of Posterior Urethra. C. J. Reynolds, Bluefield, W. Va.—p. 825.
Torsion of Testicle and Its Appendages. H. K. Turley, Memphis, Tenn.—p. 828.
Further Experience with Exclusion Operation for Treatment of Fistula of Small Intestine. E. L. Keyes, St. Louis.—p. 832.
*Use of Stilbestrol for Treatment of Threatened and Habitual Abortion and Premature Labor: Preliminary Report. K. J. Karnaky, Houston, Texas.—p. 838.
Interdependence of Scientific Research and Obstetric Practice. G. R. Osborn, Tulsa, Okla.—p. 847.
Affectivity. W. Thompson, New Orleans.—p. 850.
Diabetes Mellitus as Factor in Intractable Asthma. A. M. Goltman, Memphis, Tenn.—p. 854.
Fruit Sensitivity. I. S. Kahn, San Antonio, Texas.—p. 858.

Sulfonamide Derivatives and Zinc Peroxide in Gas Gangrene.—Caldwell and Cox determined the relative prophylactic and preventive value of certain sulfonamide derivatives and zinc peroxide paste in combating gas gangrene in experiments in guinea pigs infected with Clostridium welchi. After observing the effect of inoculation with a vegetative strain of the organism in more than 500 guinea pigs, they decided that no animal died from gas gangrene unless the infection extended into the abdominal wall causing considerable necrosis and lysis of the musculature of the extremity. Many animals could completely arrest local edema, serous exudate and crepitation. In comparing the data of their experiments they find that, when sulfanilamide was injected intraperitoneally, it only slightly

retarded the progress of gas gangrene as compared to surgical débridement alone. It was of no prophylactic value as it did not of itself prevent gas gangrene in a single instance. When the average death time and the number of survivals in comparable groups with closed wounds, open wounds and debrided wounds is analyzed it is seen that sulfanilamide administered systemically only slightly prolonged the survival period. Experimental gas gangrene is much more rapidly progressive than that encountered clinically in compound fractures. When a group in which zinc peroxide paste was applied to the wound is compared with a group in which sulfanilamide was implanted one hour following inoculation and the wounds allowed to remain closed, neither sulfanilamide nor the zinc peroxide prevented gas gangrene in most of the animals. Zinc peroxide did definitely prolong the average death time beyond that of the control group. As a local dressing it is valuable but as a prophylactic agent it is not as effective as other measures. Both drugs acted merely as inhibiting factors. Experiments performed to determine the relative effectiveness of sulfanilamide, sulfathiazole and sulfadiazine when implanted at the same time as the infecting organisms indicate that sulfathiazole is probably the most effective in preventing the development of gas gangrene. Although the infection was of the most fulminating type, the immediate use of any of the sulfonamides in the wound prevented its progress in most instances and was responsible for a number of survivals. In the control group of 85 animals the survival rate was 11.8 per cent as compared to 73.3 per cent of 60 animals in which sulfonamides were placed in the wounds and the wounds closed primarily. The significance of this is increased when it is considered that if sulfanilamide was implanted one hour after inoculation most of the animals died as a result of gas gangrene. When a sulfonamide was implanted six hours after inoculation and the wound debrided, the drug reimplanted and the wound closed, 49 of 59 animals survived. Sulfathiazole was a most valuable adjunct to other measures. Only clinical trial in a large number of cases will substantiate the experimental observations, but on the basis of experimental evidence the local implantation of sulfathiazole at the scene of the accident is encouraged.

Diethylstilbestrol in Abortion and Premature Labor.—Karnaky used the new synthetic diethylstilbestrol for the treatment of premature labor and of threatened and habitual abortion. For threatened and habitual abortion when severe labor pain and some vaginal bleeding were present he gave 25 mg. of the drug into the anterior wall of the cervix and five 5 mg. tablets every fifteen minutes as long as there was any uterine pain. If the pain returned and was severe, the five 5 mg. tablets were taken every fifteen minutes until it was entirely gone. After the pain ceased, 10 mg. of diethylstilbestrol in tablet form was taken every hour for six doses, then 5 mg. every hour for six doses and then 10 mg. every night until the eighth month. The injections may be omitted and only the tablets used if the patient is seen early and pain and bleeding are mild. Too little but not too much diethylstilbestrol can be given. In habitual abortion cases 10 mg. of the drug was given once or twice a day as soon as pregnancy was diagnosed. The uterine pain of threatened, habitual, complete and incomplete abortion and normal labor can be stopped immediately by giving 25 to 100 or 200 mg. of diethylstilbestrol in oil into the anterior wall of the cervix. The hard contracting uterus of abortion can be made to soften and assume its normal consistency within thirty to sixty seconds and remain so for six to eight or to twenty-four hours or longer. Diethylstilbestrol may replace corpus luteum altogether for the treatment of threatened and habitual abortion and premature labor. No deaths in utero have been observed after 25 to 6,000 mg. of it in twenty normal pregnancies, so diethylstilbestrol in therapeutic doses apparently will cause no harm. Formerly apparently sterile patients who become pregnant after study should be given 10 mg. of diethylstilbestrol by mouth every night for at least seven months. If uterine pain or bleeding starts at any time five 5 mg. tablets should be taken immediately and repeated every fifteen minutes until the pain and/or bleeding are stopped, followed by 10 mg. every hour for six doses, 5 mg. every hour for six doses and then 10 mg. every night through the eighth month.

Surgery, Gynecology and Obstetrics, Chicago

75:273-400 (Sept.) 1942

Drainage of Common Hepatic Duct, with Special Reference to Bile Peritonitis, Wound Infection and Other Complications. A. W. Allen and R. H. Wallace, Boston.—p. 273.
Ileus Associated with Edema of Bowel. O. C. Leigh Jr., New York.—p. 279.
Insult to Testicle in Herniorrhaphy. J. W. Baker and M. M. Evoy, Seattle.—p. 285.
*Clinical and Experimental Observations on Use of Corpus Luteum Extracts in Obstetrics. F. H. Falls, G. H. Rezek and S. J. Benensohn, Chicago.—p. 289.
*Intravenous Use of Amino Acids for Nutritional Purposes in the Surgical Patient. R. Landesman and V. A. Weinstein, New York.—p. 300.
Present Status of Vaginal Hysterectomy. A. W. Blain, Detroit.—p. 307.
Problem of Treatment of Secondary Peptic Ulcer. C. Holman and A. Chenoweth, New York.—p. 314.
Acute Cholecystitis and Its Rational Treatment. J. H. Saint, Santa Barbara, Calif.—p. 323.
Simplified Anastomosis for Resection of Duodenum and Head of Pancreas. H. E. Pearse, Rochester, N. Y.—p. 333.
Tendon Transplantation of Flexor Carpi Ulnaris for Pronation-Flexion Deformity of Wrist. W. T. Green, Boston.—p. 337.
Reduction of Permanent Partial Disability of Comminuted Fractures of Lower End of Radius by Skeletal Traction. F. C. Goodwin and D. M. Cameron, El Paso, Texas.—p. 343.
Modification of Higgins Technic for Ureterointestinal Anastomosis. J. A. Hyams, New York.—p. 345.
Primary Adamantinoma of Ulna. C. E. Anderson and J. B. deC. M. Saunders, San Francisco.—p. 351.
Traumatic and Spontaneous Fractures in Exophthalmic Goiter. F. A. Bothe, H. M. Simpson and L. G. Rowntree, Philadelphia.—p. 357.
Internal Wire Fixation of Jaw Fractures: Second Report with Note on External Bar Fixation. J. B. Brown and F. McDowell, St. Louis.—p. 361.
Total Gastrectomy: Technical Considerations. C. B. Morton II, Charlottesville, Va.—p. 369.
*Amyloid Goiter. G. A. Walker, Kansas City, Kan.—p. 374.
Estrogen Sparing Effect of Hysterectomy. G. P. Heckel, Rochester, N. Y.—p. 379.

Corpus Luteum Extracts in Obstetrics.—Falls and his co-workers used corpus luteum extracts in 650 obstetric cases to inhibit uterine contractions and to prevent threatened and habitual abortion. The intramuscular or intravenous injection of the material will not prevent abortion when the fetus is dead. Injections are contraindicated when a uterine infection or a mole pregnancy exists. Corpus luteum extracts have proved efficacious when a surgical emergency necessitated laparotomy in preventing the onset of labor and abortion. Patients with fibrotic uteri and previously sterile patients who have eventually become pregnant should be given injections of the extract prophylactically until the fetus has reached viability. No untoward results followed the injection of aqueous preparations even when given in 15 cc. doses intravenously. Successful treatment depends on the regular administration of adequate dosage and on the continued cooperation of the closely supervised patient.

Intravenous Amino Acids for Nutrition.—Landesman and Weinstein describe their experience with the parenteral use of an enzymatic hydrolyzed amino acid preparation for 75 patients who could not ingest, digest or absorb food normally. The enzymatic hydrolysate of casein, amigen, is supplied as a refined powder ready for use. The amigen is weighed out in 100 Gm. portions and each portion is dissolved in 1 liter (1,000 cc.) of distilled water, passed through a Berkefeld filter W, diluted to a 5 per cent solution under sterile precautions, sealed in a sterile container, steamed over a water bath for thirty minutes and then stored on ice or at room temperature. It appears that 0.7 to 0.8 Gm. of amigen per kilogram of body weight daily will maintain an active man in positive nitrogen balance. It has been the authors' practice to supply daily 50 to 100 Gm. of amigen in 2.5 or 5 per cent solution to which is added sodium chloride, vitamins and dextrose in sufficient amounts to bring the caloric intake to 1,200 to 2,000 calories. The dosage is limited by fluid tolerance and certain toxic reactions. Urticaria, angioneurotic edema or a foreign protein febrile response were not observed. A group of patients given 1,000 cc. of a 5 per cent amigen solution in one and a half hours frequently experienced flushing of the face, a feeling of warmth and frontal headache. A few had retching and vomiting, but none of these symptoms occurred when amigen was given slowly, 120 to 240 cc. per hour. The one reaction that has caused concern was phlebitis following the administration of hypertonic solutions; a 2.5 per cent solution is approximately

isotonic and is scarcely more irritating than isotonic sodium chloride solution. A 5 per cent amigen solution may be given continuously for forty-eight hours without causing phlebitis. The swelling that occurs disappears completely without inflammatory reaction within twenty-four hours. If 5 to 10 per cent dextrose is added so that the solution becomes decidedly hypertonic, endophlebitis may occur. This danger may be minimized by inserting the needle at the junction of two veins and administering 2 to 4 cc. of the solution per minute. The two facts that strongly support the theory that this amino acid mixture is utilized by the body for nutrition are that the amino acids are rapidly absorbed from the blood stream by the body tissues and are not lost in the urine and that a positive nitrogen balance may be maintained with amigen as the sole source of nitrogen. The prime indication for the administration of amino acid is a starvation state. This therapy is not an adequate substitute for plasma infusions in hypoproteinemia but it should be used as a supplement to plasma.

Amyloid Goiter.—The deposit of amyloid in the thyroid is most infrequent. Walker reports 2 cases of extensive amyloid infiltration of the thyroid. A search of the literature discloses 56 cases, bringing the total to 58. In the first case the amyloid infiltration was associated with lipomatosis as well. As the thyroid is an organ in which fat tissue is rare, this finding would suggest that there may be some more than casual relationship between the two conditions. This is supported by several other examples in the literature. In no case of thyroid amyloidosis reported has there been any evidence of insufficiency. The most common diagnostic error is to conclude that a malignant growth is present when actually amyloid is responsible for enlargement, increased consistency and nodularity of the thyroid. On the other hand, amyloid may cause considerable enlargement of the thyroid without any change in consistency.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

50:433-482 (Sept.) 1942

Gynecologic Cancer: General Consideration of Cancer of Female Genitalia. F. L. Adair, Chicago.—p. 433.
*Id.: Heredity as Etiologic Factor in Cancer. Madge Thurlow Macklin, London, Ont., Canada.—p. 439.
Id.: Radiation in Treatment of Genital Cancer. H. E. Schmitz, Chicago.—p. 445.
Id.: Errors in Treatment and Management of Carcinoma of Cervix. A. W. Diddle, Iowa City.—p. 449.
Id.: Some "Dont's" in Treatment of Carcinoma of Corpus. E. J. DeCosta, Chicago.—p. 452.
Carcinoma of Cervical Stump. S. T. Cantril and F. Buschke, Seattle.—p. 454.
Primary Anastomosis or Exteriorization and Resection of Cancerous Colon. M. S. Woolf, San Francisco.—p. 458.
Indications for Splenectomy Used as Basis in Classification of Splenic Disorders. P. Campiche, San Francisco.—p. 463.
Erythroblastosis Fetalis and Other Manifestations of Isoimmunization. P. Levine, New York.—p. 468.
Problems of Adolescence. E. Allen, Chicago.—p. 476.

Heredity as Etiologic Factor in Cancer.—Macklin shows that the foundation for the belief that chronic irritation is a cause of cancer is not as sound as some believe it to be. With the discovery that mammary and uterine cancer could be produced experimentally in animals by estrogen the emphasis has shifted from a vague conception of chronic irritation to estrogenic influence. This theory may be true, but estrogens are supplied by the organism itself, and their production is under the influence of heredity. All women with normal ovaries produce estrogens, but mammary or uterine cancer does not develop in all women. Therefore there must be some difference between those who do and those who do not have cancer. There are at least five possible ways in which they might differ: in the quantity of sex hormones generated, in the quality of sex hormones produced, hereditary differences in the tissue response to a uniform stimulus of sex hormone, hereditary differences in the inhibiting factors for tumor growth in different women and differences between the internal environment of those in whom cancer develops and of those in whom it does not. If the latter is true, that the differences are hereditary in nature, women of the same stock should be and are more alike than unrelated women, and cancer is found more often in related than in unrelated women. Heredity is of importance in that it may become the implement for the achievement of early diagnosis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:119-148 (Aug. 1) 1942

Radical Surgery of Cancer of Lower End of Common Bile Duct and Adjacent Pancreas. G. Gordon-Taylor.—p. 119.
*Diphtheria Immunization of Adults. H. M. Leete.—p. 121.
Diphtheria Immunization in a Metropolitan Borough. V. Freeman.—p. 123.
Prognostic Value of Blood Sedimentation Rate in Pulmonary Tuberculosis. E. Lewis-Fanning and M. Myers.—p. 125.
Nonpenetrating Injuries of Abdomen. T. Schrire.—p. 127.

Diphtheria Immunization of Adults.—Leete reports results of nine years of immunizing the Schick positive staff at the Hull City Hospital. The 388 persons in the group were more than 16; most of them were the nurses and domestic staff between 18 and 20 years of age. Three injections of toxoid-antitoxin floccules were given at monthly intervals up to 1935, and Schick retesting was done four weeks after the last dose. From March 1935, 0.3 cc. of alum precipitated toxoid, followed after four weeks or a little longer by 0.3 cc. with a Schick retest one month later, was the procedure. There were no severe reactions. The results with toxoid-antitoxin floccules as a whole were poor; the Schick conversion rate was 78 per cent as compared with 100 per cent with alum precipitated toxoid. Subjects likely to have severe reactions are those with pseudonegative reactions to the Schick test; they should not be immunized. It is probable that all pseudoreactors are Schick negative. The author has never seen in an adult an undoubted combined or pseudopositive reaction. In a series of 51 pseudoreactors 48 were definite pseudonegatives and in 3 it was possible that the reading was a combined one.

Lancet, London

2:117-144 (Aug. 1) 1942

Onset of Respiration at Birth. J. Barcroft.—p. 117.
*Terminal Ileostomy in Ulcerative Colitis. R. Maingot.—p. 121.
Glandular Fever with Jaundice. R. Priest.—p. 124.
Skin Pigmentation with Dementia. A. Harris.—p. 125.

Terminal Ileostomy in Ulcerative Colitis.—Indications for terminal ileostomy are difficult to define, according to Maingot, because ulcerative colitis is protean in its manifestations and because of the way it responds to various types of treatment. It is indicated when efficient medical treatment has failed to bring about a cure or to relieve symptoms, when certain complications such as subacute perforation or abscess, fistula, sinusitis, obstruction, massive hemorrhage or polyposis occur or when the possibility of a malignant condition cannot be excluded. In the first group are included all those patients who were intractable to continuous medical treatment conducted under the best controlled conditions in a hospital for about six months and those chronic ambulatory patients who have been totally incapacitated for three months or more each year. Terminal ileostomy, preferably with implantation of the proximal and distal ileal limbs into separate incisions in the abdominal wall, has replaced appendicostomy, cecostomy and the like. A case of idiopathic ulcerative colitis, successfully treated by terminal ileostomy followed a year later by restoration of intestinal continuity, is described. The problem is to decide whether the colitis is healed after terminal ileostomy and, if it is, whether closure of the stomas and restoration of the continuity of the intestinal canal is safe.

Practitioner, London

149:65-128 (Aug.) 1942

After Care of Amputations. W. R. D. Mitchell.—p. 65.
Rehabilitation of Head Injuries. W. McKissock.—p. 75.
After Care of Acute Medical Diseases. L. D. Bailey.—p. 81.
Occupational Therapy. Elizabeth Casson.—p. 89.
After Care of Pulmonary Tuberculosis, with Special Reference to Tuberculosis Colonies. L. Roberts.—p. 95.
Allergic Contact Dermatitis: Etiology, Diagnosis and Treatment. D. Harley.—p. 102.
Minor Surgery: XIII. Gynecology. D. MacLeod.—p. 113.

Schweizerische medizinische Wochenschrift, Basel

72:353-376 (March 28) 1942. **Partial Index**

*Indications for Intrauterine Interventions. W. Schumacher.—p. 353.
*Functional Test of Adrenals According to Cutler, Power and Wilder: Application in Addison's Disease and Other Disorders. Anita Saurer.—p. 357.
Contribution to Understanding of Allergic Bronchial Asthma: Tests with Forssman Antiserum. P. Kallós and Liselotte Kallós-Deffner.—p. 361.
Physiology and Pathology of Crystalline Lens. M. Sachs.—p. 362.

72:377-404 (April 4) 1942

Campaign Against Diseases of Circulatory Organs. E. Attinger.—p. 377.
Hypophysis and Surgery. J. Rossier.—p. 380.
Experience with Yperite in Human Subjects and Animals. E. Rothlin.—p. 385.
Neurovegetative Therapy of Metabolic Disorders in Children: Diabetes, Nervous Anorexia and Alimentary Glycogen Lability of Infantile Acrodynia. E. Mayerhofer.—p. 388.
*Functional Test of Adrenals According to Cutler, Power and Wilder: Application in Addison's Disease and Other Disorders. Anita Saurer.—p. 394.

Indications for Intrauterine Interventions.—Schumacher outlines the principles followed at the Luzerne clinic in the treatment of abortions. Even in incomplete afebrile abortion the patient is observed for twenty-four to forty-eight hours. The general condition is determined, a gynecologic examination is performed, the sedimentation speed, leukocyte count and differential blood picture are made and the urine is examined for albumin, sugar and morphologic elements. Ecbolics are given and in cases of severe hemorrhage a blood transfusion. If after an observation period of one or two days there is no fever, the cervix is dilated, the uterus is curetted, the uterine cavity is swabbed with iodine, and a strip impregnated with iodochloroxyquinoline is inserted into the cervical canal for twenty-four hours. Intrauterine intervention is withheld in febrile abortion. All examinations, except the gynecologic, are carried out as in afebrile abortion. The gynecologic examination is postponed in order not to disseminate the infection. If a previous intrauterine intervention is suspected, local examination is done at once in order to ascertain a perforating injury. Ecbolics and sulfanilamide are given. This medication often effects a spontaneous evacuation, so that after three or four afebrile days the curettage can be restricted to mild scraping with a dull curet. This intervention must be preceded by a gynecologic examination to rule out parametrial inflammatory processes. Gynecologic examination must be made before defervescence whenever there are peritoneal signs or when a suppurating process is suspected. Sulfathiazole has recently replaced other sulfonamide derivatives in the treatment of febrile abortion. If previous intrauterine intervention is admitted or there is justified suspicion of a criminal abortion the patient, even if afebrile, is observed for at least five to eight days. If no fever develops, curettage is done. In cases of metrorrhagia the indications for curettage, as regards time and the existence of fever, are the same as in abortion.

Functional Test of Adrenals.—Saurer directs attention to the adrenal functional test described by Cutler, Power and Wilder in 1938 and reports her own experiences with it on 50 persons, including healthy subjects, patients with various disorders and 3 patients with Addison's disease. Healthy subjects and many patients exhibited in the four hour urine of the third day a nearly constant level of from 70 to 160 mg. of sodium chloride per hundred cubic centimeters or from 42 to 96 mg. of chloride. The four hour urines of the third day of the 3 patients with Addison's disease showed sodium chloride concentrations of 456, 262 and 737 mg. per hundred cubic centimeters and chloride concentrations of 274, 157 and 442 mg. per hundred cubic centimeters. The more thorough investigation of the mode of development of the increased concentration disclosed factors which throw some light on adrenal insufficiency and are important for the differential diagnosis. Observations by Cutler and his associates indicate that adrenal insufficiency manifests itself in an increased sodium chloride concentration in the four hour urine of the third day of the test period. The author detected deviations from the normal sodium chloride concentrations in the same or in the opposite direction from that in Addison's disease, also in other cases, particularly in disorders accompanied by water retention. Interesting deviations from the normal were detected particularly in certain types of emaciation and in disorders of the joints, particularly in polyarthritis. Closer investigation of the regulatory disturbances in the water-salt economy of these cases might prove instructive. In order to utilize the results of a test for the diagnosis of adrenal insufficiency the other clinical symptoms must also be taken into consideration. Adequately compensated cases of Addison's disease may show normal values in Cutler's test. It is possible that in these and in doubtful cases the prolongation of Cutler's tolerance test over a longer period might reveal changes indicative of adrenal insufficiency. The author concludes that Cutler's method is not a specific test for the adrenal function but that with consideration of the quantitative values of the fluid intake and the urinary and sodium chloride eliminations and their correlations it can be utilized as a general functional test of the water-salt exchange.

Annali d'Igiene, Rome

51:673-736 (Nov.) 1941. **Partial Index**

*Effects of Usual Chemical Preservatives on Vitamins in Preserved Food. I. Peragallo.—p. 691.

Effects of Chemical Preservatives on Vitamins.—Peragallo determined the amount of vitamins in food preserved with boric, salicylic and benzoic acids and their esters. The determinations were made shortly after preservation of food and again one month and three months later. He found that the amount of vitamins in food preserved with these acids and their esters did not diminish.

Revista Argentina de Cardiología, Buenos Aires

9:1-86 (March-April) 1942. **Partial Index**

Electrocardiogram in Simultaneous Enlargement of Heart Ventricles. B. Moia, L. H. Inchauspe, R. Claria Olmedo and F. F. Batlle.—p. 1.
*Potassium Thiocyanate in Therapy of Arterial Hypertension. B. Moia and R. Quesada.—p. 41.

Potassium Thiocyanate in Arterial Hypertension.—Moia and Quesada administered potassium thiocyanate to 30 patients with essential hypertension whose blood pressures were over 200 mm. of mercury systolic and 120 diastolic. None of the patients were in the malignant phase or had congestive cardiac failure. After more than four years of the usual treatment they were treated for ten months exclusively with potassium thiocyanate, 0.3 to 0.6 Gm. daily. The blood concentration of the drug was determined weekly by the micromethod of Griffith and Lindauer. Results were good in 6 (20 per cent) with a decrease in blood pressure of 70 to 80 systolic and 20 to 25 diastolic; they were fairly good in 13 (43.3 per cent) with a decrease of 30 to 40 systolic and of 10 to 15 mm. diastolic. Larger doses did not alter the results in this group even when blood concentration higher than 10 mg. of potassium cyanate per hundred cubic centimeters was attained. In the other 19 patients (36.7 per cent) the results were poor. No relation was found between the condition of the eyegrounds and the results obtained. Patients whose blood pressure was unstable responded better to thiocyanate therapy. The results in these patients were more favorable and more persistent. All the patients of the first group and some of the second group were relieved of subjective symptoms, but not those of the third group. The subjective amelioration obtained by autohemotherapy was more accentuated and more lasting than that obtained with thiocyanate therapy and did not cause any of the disturbances which appear especially during the first days of treatment with thiocyanate. Only 2 patients had symptoms of intolerance, such as mild erythrodermia, which rapidly disappeared on withdrawal of the drug. The authors conclude that the administration of thiocyanate should be persisted in only when results comparable to those of the first group are obtained or, even if no reduction in blood pressure is obtained, when the amelioration of subjective symptoms is greater than that which can be attained by other therapeutic measures.

Book Notices

Textbook of General Surgery. By Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine, Chicago, and Robert Elman, M.D., Associate Professor of Clinical Surgery, Washington University School of Medicine, St. Louis. Third edition. Cloth. Price, $8. Pp. 1,067, with 558 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1941.

This book was first published in 1936, revised in 1939 and revised again in 1941. The many advances in surgery have required such extensive revision of the text that it was necessary to reset the type completely for this volume. This is a textbook of surgery designed primarily for the medical student. The material is presented clearly and simply and from the physiologic point of view, although pathogenesis and surgical pathology are given due consideration. Omission of detailed consideration of the specialties as well as technical details and descriptions of operations yield brevity and avoid confusion in the mind of the student. Those features of the specialties which are important to the general surgeon are included. There are separate chapters for genitourinary surgery, gynecology and anesthesia, subjects which were slighted in preceding editions. Because of the war, particular attention is given to open wounds and burns, treatment of fractures, and the value of silk in the repair of wounds. Separate chapters are devoted to amputations and to diabetes. The effectiveness of sulfonamide compounds is discussed wherever such treatment is warranted. This book has always been noted for its fine bibliography. In this volume a number of teachers of surgery representing several schools have aided in the revision of the text. Certainly medical students will find this book an asset in the study of surgery.

Biological Symposia: A Series of Volumes Devoted to Current Symposia in the Feld of Biology. Edited by Jaques Cattell. Volume VII: Visual Mechanisms. Edited by Heinrich Klüver, Professor of Experimental Psychology, The University of Chicago, Chicago. Cloth. Price, $3.25. Pp. 322, with illustrations. Lancaster, Pa.: Jaques Cattell Press, 1942.

The present volume originated in a series of symposiums held at the University of Chicago, in which distinguished scholars from various schools participated. A few contributions not presented at this particular symposium (Sept. 24, 1941) were added, and some of the original contributions have been considerably expanded. The result is a rather remarkable compilation of knowledge and opinion on the subject of vision, considered from the biophysical, chemical, physiologic, anatomic and psychologic points of view.

Approaching the volume from the point of view of the clinical ophthalmologist, the reviewer finds himself adopting the statement attributed by Professor Klüver to Charles Darwin, namely that "he got a kind of satisfaction in reading articles which (according to himself) he could not understand." Certainly he is not in a position to evaluate critically most of the contributions of these scholars in the top flight of pure science. But at least he can be stimulated to think a little more intelligently on certain aspects of vision entirely neglected by the average clinician and yet with a definite bearing on certain of his problems. From such a wealth of material, one can scarcely do more than list the subjects covered, with brief notes on certain points which could seem to be of general interest.

Professor Hecht discusses previous efforts to apply the quantum theory to the process of vision and describes his own measurements. These indicate that, "in order to see, it is necessary for only one quantum of light to be absorbed by each of five to fourteen retinal rods," an observation in harmony with the quantum theory, since one quantum of light and energy reacts with one molecule of visual purple. Krause and Wald both discuss the chemistry of the photosensitive substances found in the retina. The probable processes by which vitamin A is converted to visual purple (rhodopsin) are described. Krause describes a number of other substances which seem to be independent of the main cycle but which probably play a definite part in vision. Wald traces the now generally accepted cycle Vitamin A + protein → rhodopsin → light → retinene + protein (visual yellow). Wald has studied the process in a number of animals and fishes. Marine fishes possess the typical rhodopsin system, while fresh water fish produce, not rhodopsin, but a related substance named by Wald porphyropsin. Strangely enough this is true also of fish such as the salmon, which live in the sea but spawn in fresh water. In these fish the prophyropsin system predominates. In animals such as the chicken, in whose retina cones predominate, Wald describes a third photopigment which he calls iodopsin. Gellhorn describes the effects of oxygen deprivation on the visual functions, showing that it results in pronounced reduction of the visual sensations and of voluntary reactions to them, while leaving autonomic responses such as the response of the pupil unaffected.

Four papers deal with the results of electroencephalography as applied to the problems of vision. Case made observations on 6 persons whose visual pathway to one occipital lobe had been interrupted by various lesions. The alpha waves in such instances were lost or greatly weakened on the side of the lesion. The paper of Marshall and Talbot, a careful attempt to correlate the electrical with the subjective phenomena of vision, leads the reviewer into a rarefied atmosphere not conducive to intelligent comment. Perhaps the most important essay in this group is that of von Bonin and his associates, which records the mapping of association areas in the occipital lobe and their connections with other parts of the brain by means of action current readings after application of strychnine to small areas.

In the anatomic group, Polyak offers a short outline from his larger work (recently reviewed) concerning the finer retinal structures and their connections, while Walls traces the evolution of the visual cells from lower to the highest organisms. Surprisingly enough his evidence indicates that the cone was the most primitive of the visual cells, that the rods developed from it in somewhat higher organisms, the cones being lost entirely and developing secondarily from rods in the higher cone bearing mammals.

In the psychologic group Professor Klüver reports careful observations on a series of monkeys in which both occipital lobes had been resected. By study of reflexes conditioned by visual stimuli he has estimated the amount and character of visual function remaining in such animals. Although certain reactions to light can be observed, Klüver is forced to the conclusion that such reactions depend entirely on the amount of light reaching the eyes and hence the lower centers, and that all "visuospatial properties as determinants of behavior" are absent. The concluding paper, by K. S. Lashley, offers an explanation of vision, and especially visual memory, in terms of a series of "resonators" in the cerebral cortex.

Morris' Human Anatomy: A Complete Systematic Treatise. Edited by J. Parsons Schaeffer, A.M., M.D., Ph.D., Professor of Anatomy and Director of the Daniel Baugh Institute of Anatomy, Jefferson Medical College, Philadelphia. Tenth edition. Fabrikoid. Price, $12. Pp. 1,635, with 1,155 illustrations. Philadelphia: Blakiston Company, 1942.

Prof. C. M. Jackson, editor of former editions of this book, withdrew on account of illness from the arduous work of editing the tenth edition and was succeeded by Dr. J. Parsons Schaeffer, professor of anatomy at Jefferson Medical College. Professor Jackson, however, continues to be one of the contributors to the present edition; among those acting in this capacity for the first time and their sections are Prof. J. C. B. Grant of the University of Toronto, the musculature; Prof. Bradley M. Patten of the University of Michigan, the cardiovascular system; Prof. Harold Cummins of Tulane University, the skin and mammary glands, and Prof. Olof Larsell of the University of Oregon, the nervous system. Death has removed Professors Bardeen, Senior and Stockard from the list of contributors, and Professor Hardesty has retired from active participation. The size of the pages has been increased in both dimensions. Each of the sections has been revised and some of them have been rewritten. The section on developmental anatomy by Prof. Richard E. Scammon of the University of Minnesota is in a very attractive form, with numerous illustrations of the developing embryo and charts, curves and formulas illustrating the growth of the body in prenatal and postnatal life. Many of these illustrations are from Professor Scammon's own laboratory. However, some embryologic descriptions which were previously included in the section on developmental anatomy in this edition have been prepared by the several contributors and are included at pertinent places in the text of the various

sections. This edition is exceptionally well illustrated and many of the illustrations are in color. The editor has continued the use of the BNA terminology in Anglicized form, with some exceptions. The latest available revision of the BNA (Basle Nomina Anatomica) is the Jena Nomina Anatomica and is known in the literature as the JNA or the INA. In this edition when these names differ from the BNA they are listed as INA terms and placed within parenthesis after the BNA Latin terms. The editor points out that confusion has been caused by these conflicting terminologies and that to eliminate the confusion an International Congress of Anatomical Nomenclature was established by the International Congress of Anatomists at Milan in 1936. This commission accepted the modified BNA, that is, the NK-INA, usage as the basis for an Official International Revision of anatomical names. Present world conditions, however, have made it impossible to predict when the commission will complete its work and make the new list of names generally available.

Personality and Mental Illness: An Essay in Psychiatric Diagnosis. By John Bowlby, M.D., Psychiatrist, London Child Guidance Clinic, London. Cloth. Price, $2.75. Pp. 280. New York: Emerson Books, Inc., 1942.

The relationship of what is understood as "personality" to types of mental disorders is an old subject for discussion, appearing time and time again throughout the history of psychiatry and still popular in many psychiatric centers. This book is a serious attempt to create a new orientation in the field, and to this end the author, who is psychiatrist at the London Child Guidance Clinic and physician to the London Clinic of Psychoanalysis, has made an approach to the problems of mental disease by evaluating what he understands as basic personality traits rather than the presenting symptoms of emotional distortions. The numerous aspects of this rather complicated field for scientific investigation of the neuroses and psychoses are introduced by discussions of the ideas and classifications proposed by Kraepelin, Bleuler, Adolf Meyer, Kretschmer, Kahn and others. This is followed by a schedule of traits characteristic of the main types of personality, with particular emphasis on the schizoid and syntonic varieties, arranged in a practical way for clinical use. There is presented also a practical clinical method of measuring and describing personality forms. Tabulations of personality traits for 36 psychotic patients and for 29 patients suffering from neurotic symptoms, presented with descriptions of classic unstable personalities, illustrate the method of study. Thirty-three traits are selected as being particularly valuable for diagnostic purposes. One section of the book is devoted to the psychoneuroses. It contains many suggestions for diagnosis and regrouping of the types in a classification scheme that has some clinical advantages. Much of the subject is still in stages of research, as the author himself recognizes. Throughout the text a number of attractive research leads are pointed out, and the urgency of more original work in psychopathology is stressed. Although many of the conclusions are tentative, the ideas offered and the method of study proposed make this work a contribution to the literature on psychiatry, and students of this subject should profit by the information to be found on its pages.

The History of Alpha Kappa Kappa. By Lee Douglas van Antwerp, A.B., M.D., F.A.C.P. Boards. Pp. 224, with illustrations. Menasha, Wis.: George Banta Publishing Company, 1942.

The Alpha Kappa Kappa medical fraternity was founded at Dartmouth College in 1888. Prominent among the founders was Dixi Crosby, whose father, grandfather and great grandfather were physicians. In three generations of this family there were nine physicians, all of whom received their medical education at Dartmouth. Although Dartmouth traditions were deeply ingrained in the founders of Alpha Kappa Kappa, they probably never visualized that the fraternity would attain national and international scope; it was their intention to found a society built on lasting principles as an aid in their studies. While the committee—Paul D. Crimm grand historian, William A. Mann grand president and Lee D. Van Antwerp editor of the *Centaur*—which prepared this history could not find some early details of organization of the fraternity, copies of reports of the early annual conventions were available. A brief history of the founding of each of the sixty-one chapters, together with many group pictures of chapter members, add to the interest of this volume. While the actual designer of the beautiful Alpha Kappa Kappa badge is not known, it is recorded that Dr. E. J. C. Ellis, Alpha '90, was on the committee that designed the badge. This volume contains also the ritual of initiation and several pages of fraternity songs.

Diseases and Injuries of the Larynx: A Textbook for Students and Practitioners. By Chevalier Jackson, M.D., Sc.D., LL.D., Honorary Professor of Broncho-Esophagology, Temple University, Philadelphia, and Chevalier L. Jackson, A.B., M.D., M.Sc., Professor of Broncho-Esophagology, Temple University. Second edition. Cloth. Price, $8. Pp. 633, with 208 illustrations. New York: Macmillan Company, 1942.

A book by the Jacksons is an event for laryngologists. While this work, with a slightly altered name, is a second edition, it has additions which increase its value materially.

In this country, most of the information on diseases of the larynx is to be had only in specific chapters which are a part of ear, nose and throat textbooks. There is nothing comparable recently in English to this edition in authority or completeness. It is, furthermore, distinctly a product of the authors and their school.

Different from similar works which not only represent the experience of the author but include to a large extent a more or less critically examined cross section of the opinions of the laryngologic world in general, this textbook is, as said, peculiarly individual. The authors have made laryngologic history, and their impress on it is tremendous. Every chapter shows this plainly; many of the clinical pictures were first described by them. If they were not the original observers they gave many conditions their definitive outlines and invented, if necessary, the proper terms expressive of these conditions. Throughout one is impressed with the clinical acumen, the painstaking observations and the meticulous handling of disease so characteristic of Chevalier Jackson. Only by comparison with what has gone before can the specialty's debt be understood.

There is no need to discuss the various chapters in detail. Those who wish to study the larynx and its diseases will find here a masterful and scholarly exposition.

An Old Doctor of the New School. By James C. Wood, M.D. Cloth. Price, $3.50. Pp. 398, with 21 illustrations. Caldwell, Idaho: Caxton Printers, Ltd., 1942.

This is the autobiography of a physician who has had an interesting and successful career, which he developed mostly in the states of Michigan and Ohio. Many others will agree with him that Cleveland is one of the friendliest of our large cities. The details which he remembers of the incidents of a happy childhood on the home farm are amazing. His delineation of the difference in temperaments of a mismated and incompatible team of horses with which he worked early and late is well done. Dr. Wood has been a staunch member of homeopathic medical circles, having taught in the homeopathic department of the University of Michigan and at the Cleveland Homeopathic Medical College. He has a chapter on the principles of homeopathy, one on homeopathy in gynecology and surgery and among others chapters on medical politics, medical derelicts and Washington, where he visited the White House with President Harding's physician, Brig. Gen. Charles E. Sawyer, also a homeopathic physician. He was for many years a member of the Board of Governors of the American College of Surgeons. He visited clinics in Europe and wrote a textbook on gynecology. In all, Dr. Wood has had a full and happy life and now at 84 still fully enjoys the fruits of many years of devotion to his family and his profession.

Big Spring: The Casual Biography of a Prairie Town. By Shine Phillips. Cloth. Price, $2.50. Pp. 231, with drawings by Jerry Bywaters. New York: Prentice-Hall, Inc., 1942.

This "casual biography of a prairie town" consists of a series of nostalgic reminiscences of a West Texas town of some fifty or sixty years ago. The town is presented through the remarks of the druggist to a traveler. The two chapters remotely related to medicine concern the old time druggist—pillroller—and the old "Doc".

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HYPERSENSITIVITY TO INSECT BITES

***To the Editor:*—I have noticed that shortly after I have been bitten on the hand by a mosquito I develop a typical transitory lymphangitis which itches a great deal and extends at times to the axilla. I do not find any reference to this in the literature. Can you tell me if this is a common occurrence? Is it a manifestation of allergy?**

Egon E. Kattwinkel, M.D., West Newton, Mass.

ANSWER.—It is not uncommon for persons to demonstrate varying degrees of hypersensitivity to insect bites. The hypersensitive state may develop through contact with the scales from the wings or body of insects, the injection of venom or the introduction of salivary secretions.

Rhinitis and asthmatic attacks have been reported to result from inhalation by sensitized persons of scales and dust from sand flies, caddis flies, various moths and butterflies, bees, wasps, bedbugs and even the house fly:

Parlato, S. J.: A Case of Coryza and Asthma Due to Sand Flies (Caddis Flies), *J. Allergy* **1**: 35 (Nov.) 1929.
Parlato, S. J.: The Sand Fly (Caddis Fly) as an Exciting Cause of Allergic Coryza and Asthma, *ibid.* **1**: 307 (May) 1930.
Figley, K. D.: Asthma Due to the May Fly, *Am. J. M. Sc.* **178**: 338 (Sept.) 1929.
Sternberg, Louis: A Case of Asthma Caused by the Cimex Lectularius (Bedbug) *M. J. & Rec.* **129**: 622 (June 5) 1929.
Ellis, R. V., and Aherns, H. G.: Hypersensitiveness to Air Borne Bee Allergen, *J. Allergy* **3**: 247 (March) 1932.
Parlato, S. J.: A Study of the Atopic Reagins of the Caddis Fly, Butterfly and Moth, *ibid.* **3**: 125 (Jan.) 1932.
Balyeat, R. M.; Stemen, T. R., and Taft, C. E.: Comparative Pollen Mold, Butterfly and Moth Emanation Content of the Air, *ibid.* **3**: 227 (March) 1932.
Jamieson, H. C.: The House Fly as a Cause of Nasal Allergy, *ibid.* **9**: 273 (March) 1938.

Occasionally a bee keeper is forced to give up his occupation due to increasingly severe reactions to bee stings:

Benson, R. L., and Semenov, H. Z.: Allergy in Its Relation to Bee Sting, *J. Allergy* **1**: 105 (Jan.) 1930.
Beck, B. F.: Bee Venom Therapy, New York, D. Appleton-Century Company, Inc., 1935.
Braun, L. I.: Notes on Desensitization of a Patient Hypersensitive to Bee Stings, South African M. Rec. **23**: 408 (Sept.26) 1925.

Deaths due to anaphylactic shock following bee stings have been reported.

Undoubtedly the reaction to mosquito bites simulating transitory lymphangitis is an allergic phenomenon. Benson (*Arch. Int. Med.*, referred to later), working with mosquitoes, found that in hypersensitive individuals the immediate wheal following the insect bite was insignificant in comparison to the height of the reaction reached in twenty-four to fourty-eight hours, at which time a large, slightly raised infiltration appears which persists for several days. These infiltrations may involve the entire arm after a single mosquito bite. Hecht (*Zentralbl. f. Haut-u. Geschlechtskr.* **44**:241, 1933) reports such a phenomenon following the bite of the mosquito Anopheles maculipennis. Brown, Griffitts, Ersin and Dyrenforth (*South. M. J.* **31**:590 [June] 1938) describe the occurrence of the Arthus phenomenon with mosquito bites.

The results of investigation on the value of extracts of insects as desensitizing agents have shown that the sensitization is species specific for the insect involved and that hypersensitive individuals can be desensitized by a series of inoculations with the specific extract:

Benson, R. L.: Diagnosis of Hypersensitiveness to the Bee and to the Mosquito, *Arch. Int. Med.* **64**:1306 (Dec.) 1939.
Benson, R. L.: Diagnosis and Treatment of Sensitization to Mosquitoes, *J. Allergy.* **8**: 47 (Nov.) 1936.
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PHYSIOLOGY OF DROWNING

***To the Editor:*—What are the physicochemical changes which take place in a drowned human body which cause it to rise subsequently? What time is required for the different phases, and is there any difference between salt and fresh water?**

L. A. Crowell Jr., M.D. Lincolnton, N. C.

ANSWER.—The physiology of drowning was investigated extensively by Paul Bert, whose findings were described by Brouardel (La pendaison, la strangulation, la suffocation, la submersion, 1897). More recently, workers at Banting Institute, Toronto, have reported experimental investigations (Longheed, D. W.; Janes, J. M., and Hall, G. E.: Physiological Studies in Experimental Asphyxia and Drowning, *Canad. M. A. J.* **40**:423 [May] 1939). The physicochemical changes in the body are identical whether produced by drowning or by other types of asphyxiation, except that there appears to be some tendency to hyperchloremia when in sea water.

The drowned body floats because of the progressive accumulation of metabolic gases in the body cavities, which finally produce enough of a gradient in specific gravity to float it. The same thing happens if the body is placed in the water immediately after death. In salt water, theoretically, the buoyant force of the water is greater; therefore the body would float earlier. However, so many factors modify the time sequence of reactions that it is doubtful whether there is much practical importance to this point. Some of these factors are the relative amount of fat, the amount of air imprisoned in the clothing, the amount of water that gets into the lungs (many people drown with no water in the lungs because of laryngospasm), the amount of water swallowed into the stomach and lastly the metabolic state of the victim. Any textbook on physiology describing the sequence of events in asphyxiation will give the inquirer the full details, which are too extensive for inclusion here.

SIMULTANEOUS USE OF GOLD AND VITAMIN D FOR RHEUMATOID ARTHRITIS

***To the Editor:*—Has any work been done on the treatment of rheumatoid arthritis using both intramuscular gold salts and high dosages of vitamin D at the same time? My practical question is "Are the hazards in the use of the former enhanced by active mobilization of calcium?" Should the dosage of the gold be reduced during intensive vitamin D therapy or could the two be used safely in full dosage together?**

C. S. Shuman, M.D., Black River, N. Y.

ANSWER.—Special studies have not been conducted to determine the value of treatment of rheumatoid arthritis employing large doses of vitamin D together with gold salts. There is no evidence that the toxicity of gold is increased by administration of vitamin D in large amounts. The intermediate metabolism of gold is not well understood. Whether alterations in calcium and phosphorus metabolism, should they occur as a result of vitamin D therapy, would affect the metabolism of gold is not known. Various attempts have been made to alter the metabolism of gold in a way similar to the manner in which lead metabolism is affected, but all of these attempts have been unsuccessful. In the present state of our knowledge there seems to be no reason to employ smaller amounts of gold because vitamin D is used simultaneously. Because each of these preparations independently may cause toxicity, should gastrointestinal symptoms or vague neuromuscular symptoms occur, it may be difficult to know which drug is causing them.

BALL PESSARIES

***To the Editor:*—Would you please discuss the use of ball pessaries, their indications and relative value as compared to other nonoperative measures? Where can I find references and instructions how to fit them?**

M.D., New York.

ANSWER.—Ball pessaries were formerly rather widely used for palliative relief of patients with cystocele and uterine prolapse. The ball is usually hollow, the size of a golf ball or larger, and commonly made of celluloid or plastic material.

Insertion is a simple matter, and the ball usually holds a uterus perfectly provided there is sufficient perineal support. Even in apparently satisfactory cases, however, the ball may fit too tightly. Curtis in his Textbook of Gynecology, second edition, records having been called on several times to remove one of these pessaries and in two instances required gas anesthesia to remove a ball which had been easily inserted by the family doctor.

The Menge pessary or Gellhorn's modification of it or the Emmer-Gellhorn pessary is much more satisfactory for the nonsurgical care of cystocele and uterine prolapse. Illustrations of these instruments and the technic of their use are available in standard textbooks of gynecology.

PROGRESSIVE MYOPIA IN CHILDREN

To the Editor:—Is there any relation between progressive myopia in children and hypothyroidism? Some eye specialists feel that children exhibiting progressive myopia should receive thyroid unless their basal metabolic rate is on the plus side.

M.D., California.

ANSWER.—The only evidence in favor of any relation between progressive myopia and hypothyroidism seems to be in a report by Bothman, who found slightly lowered metabolism in some cases. This does not seem to have been confirmed by other observers, and the reliability of computing metabolism in children has been brought into question. Most ophthalmologists feel that proof of any such relationship is insufficient. This writer has checked metabolism in a number of cases without finding any evidence of hypothyroidism. An article by Cowan in the *American Journal of Ophthalmology* for July 1942 expressed the opinion held by a large group of ophthalmologists, which is that myopia is a growth phenomenon without any relation to endocrine disorders or any systemic disease and that it is not affected by local or systemic treatment.

TAME RABBITS AND PLAGUE

To the Editor:—I have had many recent inquiries about the plague "black death." Please inform me if tame rabbits constitute a menace in the spread of this disease.

W. Calvin Jones, M.D., Pampa, Texas.

ANSWER.—Yes, if the rabbits are in an infected territory. Plague infection has been proved in the tissue of cottontail rabbits in nature, in fleas from these rabbits and in tissue from jack rabbits and brush rabbits. Dr. B. J. Lloyd of the U. S. Public Health Service (retired) states that a pet rabbit died of plague in the same house in which he lived in Guayaquil, Ecuador. A campaign of extermination had been conducted against the rats. While the important rat flea vector of plague prefers rats, it will also feed on other animals, especially when its favorite host is not available. If plague is present in the vicinity, tame rabbits are an element of danger in spread of the infection; if not, they constitute no menace.

USE OF CYCLOPLEGICS IN REFRACTIONS

To the Editor:—It was brought to my attention by one of the optometrists working in the camp hospital that the majority of the better ophthalmologists in the United States no longer use a cycloplegic as a routine refraction aid. I would appreciate learning the true facts in this regard.

Major, M. C., U. S. Army, H. L. Falk, M.D., Camp Haan, Calif.

ANSWER.—Thirty years ago the ophthalmologists of this country were using cycloplegics routinely in refraction in about 5 per cent of their cases. Today, particularly in the larger cities, similarly trained ophthalmologists are using cycloplegics routinely in about 90 to 95 per cent of their refractions, regardless of the age of the patient. There are two definite reasons for this. In the first place the refraction is much more accurate particularly for younger people, among whom accommodation plays a role. In the second place, patients come to ophthalmologists for a thorough examination of their eyes, a procedure that is not completely possible without dilatation of the pupils.

TREATMENT OF SYPHILIS IN PATIENT WITH CARCINOMA

To the Editor:—A man aged 54, who has carcinoma of the tongue, has received radium treatments but still complains of pain, as the area which was treated is ulcerated and not completely healed. His Wassermann reaction is 4 plus, but, because of living in the country on a ranch and not having the facilities to drive into town, he has discontinued his antisyphilitic therapy. I feel that his mouth condition, from the standpoint of healing, might be bettered if he was taking antisyphilitic therapy. Would you be so kind as to tell me whether sobisminol mass would be indicated in such a case and would it be beneficial, or what type of antisyphilitic therapy (which would have to be oral) could be given this man? Will you kindly give me a procedure of treatment, using the oral preparation which you deem best?

M.D., New Mexico.

ANSWER.—At present there are no drugs that can be used orally in the successful treatment of syphilis. Neither does it seem essential to treat the syphilis in the case described, because at the moment the carcinoma of the tongue is the paramount issue. The only need for such treatment would be if the lesion on the tongue was gummatous rather than carcinomatous. If the malignant condition is controlled, it might then be advisable to institute antisyphilitic treatment of a mild nature, and the use of a bismuth compound given intramuscularly in small doses would probably be the most satisfactory treatment for the syphilis in this instance if there are no other manifestations of the disease that required intensive therapy.

"MEMBRANE" IN EXTERNAL AUDITORY CANAL

To the Editor:—I have had occasion routinely to examine many ears, both under normal conditions and after the washing out of a plug of ear wax. Particularly after washing, but occasionally too in the unwashed ear, I have noticed the remains of a membrane stretching across the middle third of the external auditory canal whose plane is approximately parallel to that of the drum membrane. It is rare to find this membrane intact; rather one observes the remaining half or third of it or else its broken detritus lying on the floor of the external auditory canal. However, on two occasions the membrane remained almost intact, and once a small rent in it gave rise to the mistaken diagnosis by a colleague of a perforation of the tympanum. I have not seen mention of this membrane (which I called false tympanum for want of a better name) in textbooks and should like to know if it is recognized and by what name.

M.D., New York.

ANSWER.—The skin of the external auditory canal, like the integument elsewhere, constantly loses its most external layers. Any condition which allows the desquamated cells to remain in the canal may be responsible for the appearance of false tympanic membranes. This is particularly true in the presence of hard impacted cerumen, which acts like a mold to shape the cast off epithelium.

Neither Politzer, who is said by some to have seen and noted "everything," nor the Handbuch of Denker and Kahler, makes any specific remarks concerning the condition described.

ACCOMMODATION DURING PREGNANCY

To the Editor:—It has recently come to my attention that some of the public and also obstetricians feel that glasses fitted during pregnancy may not be suitable after parturition. As I cannot find any references, what is your opinion as to whether the refractive error or index of refraction does change?

M.D., Denver.

ANSWER.—Changes in the actual refraction of the eye during pregnancy, unaccompanied by ocular disease, have not been noted. However, it is well known that disturbances of accommodation do occur not infrequently, probably because of generalized muscular weakness and simulating a premature presbyopia. Glasses to correct that condition would no longer be suitable after parturition. Actual disease of the eye with resultant decrease in vision due to ocular disease is not uncommon. An extensive discussion of this subject may be found in the old American Encyclopedia of Ophthalmology, volume XIII.

CONVULSIONS AND UNCONSCIOUSNESS FROM HYPOGLYCEMIA

To the Editor:—What is the frequency of clonic convulsions in hypoglycemia attended with loss of consciousness? How low does the blood sugar drop, and is there any premonition of its approach? Without laboratory aid are there pathognomonic signs to differentiate epilepsy and hypoglycemia?

J. Eugene Kraft, M.D., Rochester, N. Y.

ANSWER.—While a statistical frequency cannot be stated for clonic convulsions with loss of consciousness in hypoglycemia, it is a not infrequent occurrence. The critical level of hypoglycemia at which symptoms begin to be observed is usually given as 40 mg. per hundred cubic centimeters. However, it is generally agreed that hypoglycemic manifestations are not strictly related to the absolute level of the blood sugar but are rather a function of the rapidity of the fall in the blood sugar level. Premonitory signs and symptoms of impending hypoglycemia are the rule, but their particular nature for a given patient is a highly individual matter, although they are usually a constant characteristic in that person. Without laboratory aid there are no pathognomonic signs to differentiate attacks of hypoglycemia from epilepsy.

SILICOSIS AND THE HEART

To the Editor:—I am much interested in the communication in The Journal, Sept. 26, 1942 page 326, with reference to silicosis and the heart. I am satisfied that the relationship between pulmonary fibrosis such as obtains in silicosis and cor pulmonale has been insufficiently recognized. This is true not only of clinical investigations but in many instances of postmortem studies. I believe that many patients with silicosis do die of heart failure and this is substantially recorded in the literature. The distinction between simple discrete silicotic nodulation as affecting the heart and more massive fibrosis is not a sound one if it is based only on clinical and x-ray studies. I have many cases in my own experience of death from right heart failure in cases of silicosis that were diagnosed during life as uncomplicated nodular silicosis. Whether or not the symptoms obtaining in silicosis are cardiogenic secondary to plumonary disorder or primary cardiogenic depends a good deal on the care and extent of the clinical investigation and the thoroughness with which the physician applies present day knowledge of the interrelationship between pulmonary and cardiogenic disorders.

Norbert Enzer, M.D., Milwaukee.